US PROGRAMS

RECHARGEABLE BATTERY LABELING

Introduction

During the early 1990s, many in the rechargeable battery industry sought to create a nationwide battery collection and recycling program. This voluntary industry initiative was impeded, however, by differing state battery labeling and waste management requirements. One type of battery waste might be subject to differing regulations, depending on the state in which it was generated. In particular, differing waste management requirements stemmed in part from the Resource Conservation and Recovery Act (RCRA) of 1976, which regulates the management of hazardous wastes such as used rechargeable nickel-cadmium batteries. In May of 1995, EPA sought to remedy the situation by promulgating the Universal Waste Rule which, among other things, eased the regulatory burden on businesses that generate batteries and certain other hazardous wastes by streamlining some of the most stringent provisions of the hazardous waste regulations. The Rule only took effect, however, when states formally adopted it into their own regulations. As of May 1996, only 32 states had done this, resulting in differing requirements across states and further complicating efforts to implement a nationwide recycling program. Subsequently, the Portable Rechargeable Battery Association (PRBA) pushed for the *Mercury-Containing and Rechargeable Battery Management Act* (the Battery Act), which was signed into law on May 13, 1996. The goal of the Battery Act was twofold: to reduce the mercury content of consumer batteries and to encourage battery recycling. As part of the latter goal, the Act made the Universal Waste Rule effective immediately in all 50 states. In addition, it specified national uniform battery labeling requirements for the collection, storage, and transportation of batteries covered by the Battery Act. Covered batteries include rechargeable nickel-cadmium batteries, certain small sealed lead-acid batteries, and certain rechargeable consumer products powered by such batteries.

Program Summary

Battery labeling under the Battery Act is unlike most other environmental labeling programs. As a mandatory program, it is dedicated not to product quality differentiation like most labeling programs, but to promoting recycling efforts following product use.

The Battery Act requires that each regulated battery (rechargeable nickel-cadmium batteries and certain small sealed lead-acid batteries) or rechargeable consumer products without an easily removable battery manufactured at least one year after the Act's enactment, bear the following labels:

(1) 3 chasing arrows or a comparable recycling symbol.
(2) On each regulated nickel-cadmium battery, the chemical name or abbreviation "Ni-Cd" and

the phrase "BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY."
(3) On each regulated lead-acid battery, "Pb" or the words "LEAD," "RETURN," and "RECYCLE," and if the regulated battery is sealed, the phrase, "BATTERY MUST BE RECYCLED."
(4) On each rechargeable consumer product containing a regulated battery that is not easily removable, the phrase, "CONTAINS NICKEL-CADMIUM BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY." or "CONTAINS SEALED LEAD BATTERY. BATTERY MUST BE RECYCLED.", as applicable.
(5) On the packaging of each rechargeable consumer product, and the packaging of each regulated battery sold separately from such a product, unless the required label is clearly visible through the packaging, the phrase "CONTAINS NICKEL-CADMIUM BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY." or "CONTAINS SEALED LEAD BATTERY. BATTERY MUST BE RECYCLED." as applicable (Public Law 104-142, Section 103)

Alternative labels can be certified by EPA if they convey the same information or conform to a recognized international standard created for the same purpose as the regulation. The Battery Act also gives EPA the authority to impose similar labeling requirements on other classes of rechargeable batteries, should they be deemed toxic and harmful when disposed of through land disposal or incineration.

EPA was designated the official administering agency of the Battery Act. Within EPA, specific responsibilities have been delegated to various offices and divisions. Enforcement issues are handled by the Office of Enforcement and Compliance Assurance, while the Office of Solid Waste (OSW) is responsible for many of the other tasks. Specifically, OSW's Municipal Information and Analysis Branch has been assigned responsibility for interpreting the labeling and easy removability requirements of the act. Its responsibilities also include reviewing applications for alternative labels, as well as petitions for exemptions from the easy removability requirements.

Program Methodology

All regulated batteries and certain rechargeable battery-containing products must be labeled according to Section 103 of the Battery Act. Though some of these regulated product categories are established by the law, the Battery Act does allow EPA to include other classes of batteries should they be deemed toxic and harmful to human health and the environment when incinerated or disposed of in landfills. In this way, the setting of product categories beyond that established by the Act is left to EPA. Labeling criteria are set by the Battery Act however, since EPA can only certify alternative labels if they convey the same information as the labels specified in the regulations. With regulated products labeled, individual product evaluation does not occur.

Other Information

In December 1995, the International Electrotechnical Commission (IEC) published International Standard IEC 1429 for the labeling of batteries with a Moebius loop (three chasing arrows, established by ISO 7000-1135 as the international recycling symbol) and chemical symbols indicating the electrochemical system of the battery. IEC 1429 hasn't been adopted by the American National Standards Institute (ANSI) as a voluntary US standard. In promoting the Battery Act, however, US rechargeable battery manufacturers recognized that it would be advantageous to comply with IEC 1429 in the interest of wider consumer recognition and reduced burden on manufacturers seeking to comply with both domestic and international standards.

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The Mercury-Containing and Rechargeable Battery Management Act, Public Law 104-142.

Product Categories

Toxic rechargeable batteries (e.g. nickel-cadmium and certain small sealed lead-acid batteries)
Rechargeable consumer products without easily removable batteries

THE CHLORINE FREE PRODUCTS ASSOCIATION (CFPA)

Introduction

During the early 1990s, environmental campaigns against the use of chlorine bleaching in paper manufacturing prompted some manufacturers to seek alternative methods of paper processing. Wishing to publicize the use of such alternative methods, paper and pulp manufacturers interested in chlorine-free bleaching established the Chlorine Free Products Association (CFPA) in March of 1994 as a non-profit trade association dedicated to the elimination of chlorine-based chemistry in manufacturing processes. Supported primarily by pulp and paper manufacturers and associated businesses, CFPA's activities are focused on advocating totally chlorine-free (TCF) processing, educating consumers on chlorine processing alternatives, and developing markets for TCF manufacturers. On June 9, 1997, CFPA announced the development of a certification program for the pulp and paper industry. It is also in the process of developing a certification program for recreational and drinking water purification.

Program Summary

The CFPA pulp and paper certification program is completely voluntary and examines the bleaching chemistry used in paper mills, bleach plants, and/or de-inking facilities. Facilities whose bleaching processes are free of chlorine and chlorine compounds may be certified. While hired technicians perform the actual site visit, CFPA staff set the criteria for chlorine-free processing based on standard TAPPI (Technical Association of the Pulp and Paper Industry) processes used in the pulp and paper industry. The manufacturing plant is visited biannually to ensure compliance with TCF standards. Though CFPA itself is funded by member dues, there are unpublished evaluation fees associated with the certification, which must be renewed annually.

For the pulp and paper industry, CFPA has developed two logos for use on paper products. "Totally Chlorine Free" logos are reserved for virgin fiber papers that have been produced without the use of pulp bleached with chlorine or chlorine compounds. "Processed Chlorine Free" logos are for recycled content papers and indicate that any virgin fiber is totally chlorine-free and that the recycled content, though it may have originally undergone chlorine bleaching, was not re-bleached with chlorine-containing compounds when recycled. The logo also ensures that a minimum of 20 percent post-consumer waste was used. Once certified, companies may use the proper CFPA logo in ads and on retail products. Certified pulp manufacturers may provide their logos to distributors who market or process their chlorine-free goods, but they are responsible for the correct use of the logo. Any use of the logos must be registered with CFPA. CFPA also asks certified facilities for annual sales reports so that they can track the market success of CFPA's certified products. Two facilities are currently certified. The pulp and paper industry is the first to use the logo, but others will use it soon, except water purification.

Program Methodology

CFPA's selection of product categories is done through environmental impact evaluation, political processes, and manufacturer initiative. Product criteria are developed through a published peer-review process. Product criteria address manufacturing processes, product uses, reuse, recycling, ingredient or materials restrictions, and the environmental performance of production processes. Both manufacturers' input and impending studies serve to inform the selection of product categories and the setting of product criteria.

Other Information

As part of its efforts to promote chlorine-free processing, CFPA has been involved in efforts to obtain federal procurement preference for chlorine-free papers under President Clinton's 1993 executive order 12873. This executive order directs federal agencies to purchase "environmentally preferable" products, a designation whose current definition does not include chlorine-free papers. The development since 1993 of several chlorine-free papers that meet federal specifications helps argue for inclusion in the federal government's procurement program.

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Chlorine Free Products Association. *Use of TCF/PCF Logos 1997 Certification Program*. June 9, 1997.

Chlorine Free Products Association. *A New Association was Formed to Promote TCF Technology and Products*. March 16, 1994.

Product Categories

Final Categories

Virgin fiber paper
Recycled content paper

Categories Under Consideration

Drinking water purification

Recreational water purification

US ENVIRONMENTAL PROTECTION AGENCY'S CONSUMER LABELING INITIATIVE

The Consumer Labeling Initiative (CLI) is a voluntary cooperative effort to foster pollution prevention, empower consumer choice, and improve understanding by presenting clear, consistent, and useful safe use, environmental, and health information on household consumer product labels. The CLI was created by the US Environmental Protection Agency (EPA) to reach out to consumers, the chemical industry, trade associations, and environmental and public interest groups to determine what information is needed on consumer product labels, and how that information should be presented. It is one of several EPA efforts resulting from the President's goal to "Reinvent Government." The CLI has been highlighted as a prototype for the Agency due to its innovative research process, one that brought together a cross-section of stakeholders and successfully worked to gather input from diverse points of view. The CLI research and policy formulation began with work groups that included EPA, federal and state government staff, representatives from the United States' leading chemical companies, public interest organizations, and other stakeholders. These groups worked together to ensure that the CLI would be as useful as possible and that results could be used productively by everyone involved at the government, industry, and consumer level.

The CLI is a multi-phased pilot project focusing on indoor insecticides, outdoor pesticides, and household hard surface cleaners, some of which are FIFRA certified, meaning that they are registered antimicrobials or disinfectants. Phase I of the project involved a qualitative consumer research study, a review of comments solicited through a notice in the Federal Register, and a literature review of relevant publications and reports of studies. Phase I research findings were categorized into three areas: 1) labeling issues not requiring further validation; 2) labeling issues requiring further development or statistical validation; and 3) education, policy planning, and coordination issues. EPA has already implemented a number of interim label recommendations based on Phase I findings. These include encouraging producers to: print telephone numbers on product labels, use common names instead of formal chemical names, list "Other Ingredients" instead of "Inert Ingredients," and use "First Aid" instead of "Statement of Practical Treatment."

Phase II of the CLI will include quantitative and secondary research, as well as education activities and policy planning and coordination activities. The research study will focus on consumer comprehension, attitudes, behavior, and satisfaction regarding labeling, as well as an evaluation of labeling alternatives. Education activities will be aimed at consumers and will emphasize the importance of reading the label. Through the policy and coordination activities, EPA will investigate issues relating to ingredients, health and safety, and product storage and disposal.

THE RAINFOREST ALLIANCE - ECO-O.K. CERTIFICATION PROGRAM

Introduction

The Rainforest Alliance is an international nonprofit organization dedicated to the conservation of tropical forests. Founded in 1987, its mission is to develop and promote economically viable and socially desirable alternatives to the destruction of rainforests, an endangered, biologically diverse natural resource.

In 1991, the Rainforest Alliance created a labeling program called ECO-O.K, that specifically targets agricultural products grown at the expense of tropical ecosystems. The program has developed standards for bananas, coffee, and oranges, and is in the process of developing standards for cocoa and cane sugar. They aim to promote sustainable production of these products in the rainforests of Latin America. To date, ECO-O.K. has certified 5 farms for oranges, 3 farms for coffee, and close to 100 farms for bananas.

Program Summary

Anyone can suggest an agricultural product to the Rainforest Alliance as a possible category. Rainforest Alliance then evaluates the potential impact of the product and decides whether to develop criteria. Certification criteria are developed by a team of producers (farmers), scientists, conservationists, representatives of government agencies, and other stakeholders. Criteria are determined by scientific and community issues, and vary based on specific community needs.

Once criteria have been determined, certification begins with a field evaluation by ECO-O.K. technicians. The technicians document changes that must be made to meet criteria. After the grower has made the changes, the technical team returns to the farm to prepare a detailed report which is then passed on to a review board for approval or rejection. If approved, the product receives the ECO-O.K. seal of approval, distinguishing the labeled product from other retail products in the marketplace. Audits are conducted annually to ensure compliance.

Program Methodology

As mentioned above, anyone can suggest an agricultural product to the Rainforest Alliance as a possible category. Once Rainforest Alliance evaluates the potential impact of the product, it proceeds on whether to develop criteria. Criteria are determined by scientific and community issues, and vary based on specific community needs. The certification criteria for the ECO-O.K. project are unique compared to many of the other programs included in this report, in that they measure social as well as environmental responsibility. The specific guidelines for each of these criteria are extensive, involving many restrictions for each category. Although criteria have been developed for bananas, coffee and oranges, the criteria for oranges are not yet available in English.

Listed below are the basic principles to which any certified farm must comply. These standards are used regardless of crop or country of production.

Conservation:

No deforestation of new farms
Protect wildlife and native plants
- no hunting
- special protection for threatened or endangered species
- Use native plants in buffer zones
Conserve forest patches and take measures to improve them as wildlife habitat
Protect streams and enact special protection for wetlands and riparian areas
Mandatory canopy cover over coffee and cocoa
No negative impacts on nearby parks and refuges
Conserve watersheds

Community

Fair and just treatment of workers
Adherence to local labor laws and to ILO conventions
The right to organize and join worker representative groups
Fair and reasonable working hours within context of the local labor economy
No racial discrimination
Age restrictions on hazardous jobs
Work should not interfere with education for children
Safe and sanitary working conditions
Dignified housing for workers living on the farm, including access to potable water
Access to latrines, washrooms, and potable water
Access to health care, including regular, mandatory, medical checkups for workers who apply agrochemicals
Complete analysis of working areas to prevent accidents
First aid and fire suppressants readily available
Security measures, including proper safety equipment and secure storage of agrochemicals
Clean and orderly working environment
Good neighbor policy toward nearby communities
Respect for cultures and beliefs
Always a fair price and a green premium where possible

Cultivation:

Soil conservation
Vegetative cover

Compost and recycle organic wastes
Planting on contours; vegetative erosion barriers
Minimal use of fertilizers, only when warranted by soil analysis
Crops planted only on suitable areas according to national land-use and soil analysis maps
Water conservation and reutilization
Pollution control, including processing plants and mills
Comprehensive waste management to reduce, reuse and recycle
Minimal and strictly managed use of pesticides

Other Information

The Rainforest Alliance has not experienced any trade issues. It states that trade issues tend to be minimized because it is a voluntary, non-government, non-profit program.

As explained above, ECO-O.K. is a certification of sustainable operating practices. However, in the European Union, the use of the word "eco" is legislatively restricted to mean "organic." The ECO-O.K. label is therefore not used, for instance, on Chiquita brand bananas in the EU even though its farms are certified.

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HVS ECO SERVICES' ECOTEL® CERTIFICATION

Introduction

The ECOTEL® Certification is a third-party seal of approval awarded by HVS Eco Services to hotels and motels that "demonstrate a heightened level of environmental sensitivity." HVS Eco Services, an environmental consulting firm serving the hospitality industry, created the ECOTEL® Certification in November 1994 and has since awarded the certification to less than 5 percent of the hotels that have applied.

The ECOTEL® Certification was developed in response to a heightened level of environmental consciousness among travelers, as illustrated by the US Travel Data Center's studies, which show that 87 percent of consumers claim to support environmentally-oriented travel companies. Demand for eco-tourism prompted both travelers and hoteliers to wonder what aspects and what level of environmental performance were considered "good." The ECOTEL® Certification helps establish a benchmark for environmental performance, as well as a way for hotels' own environmental claims to be independently verified.

According to HVS Eco Services, undergoing the ECOTEL® evaluation can help to highlight potential environmental and conservation opportunities that can result in significant cost savings. In addition, some ECOTEL®s (certified hotels) are reporting increases in bookings for meetings and room reservations since attaining the certification.

Program Summary

The ECOTEL® Certification consists of a five-globe rating system where each globe represents a different category of environmental performance: solid waste management; energy management; water conservation and preservation; employee education and community involvement; and legislative compliance and native land preservation. Hotels can be evaluated in any of these categories, although most choose all five. Hotels need only one globe to be considered an "ECOTEL®". Physical facilities and operating procedures are evaluated according to HVS Eco Services' criteria which were developed in consultation with such hospitality and environmental organizations as The Rocky Mountain Institute, The Ecotourism Society, Certified Utility Consultants, and Cornell University's School of Hotel Administration. HVS Eco Services reports that its criteria are reviewed and updated quarterly as well as in response to periodic technological innovations. Although the criteria are proprietary information, evaluated hotels are briefed on which specific certification requirements they failed to satisfy. Based on the evaluation, hotels can be awarded an ECOTEL® Globe Award for each qualifying category.

The ECOTEL® evaluation process begins with a preliminary telephone interview to determine whether a hotel is a viable candidate for certification. The hotel might be asked to submit to HVS Eco Services documentation regarding its environmental program, or to describe specific

environmental projects. Once a basic level of environmental performance is determined, an on-site inspection is then performed by HVS Eco Services personnel who inspect the physical plant and conduct interviews with management, employees, and possibly the local community. Management and employee perspectives help to give evaluators a realistic picture of the hotel operations, while interviews with the local community are conducted as part of their evaluation for the "employee education and community involvement" and the "legislative compliance and native land preservation" globes.

ECOTEL® evaluates hotels according to a three-tiered scoring system in which the first round addresses the most basic standards of environmental performance, the second awards points for more advanced levels, and the third gives points for outstanding environmental programs. Hotels must earn all of the first-round points, but only 75 percent of the second-round points. Third-round points are bonuses that count toward the second-round requirement. This variable scoring system was created to allow for the individuality of different environmental programs, while ensuring a minimum performance level. In addition, the scoring system is adapted for each hotel's size and location. At the end of every evaluation, whether or not certification is granted, hotel management is presented with a Justification Rating summarizing the results of the evaluation, as well as an Environmental Action Plan describing methods to improve and ensure the longevity of the hotel's environmental program.

Certified ECOTEL®s undergo scheduled inspections every two years, as well as surprise visits to ensure continued environmental performance. ECOTEL® Certification can be revoked at any time if there is substandard performance.

The ECOTEL® Certification conveys a number of promotional benefits upon its recipients, including a license to use the ECOTEL® logo in signage and marketing. HVS Eco Services promotes its member hotels through regional and international events highlighting the ECOTEL®s, feature stories in international travel magazines, and exhibitions at international conferences. ECOTEL®s are listed in a referral system, a number of international travel directories, and the ECOTEL® Internet Directory. HVS Eco Services also provides information and ongoing consulting to certified hotels on environmental products and services, environmental conferences, and industry events.

ECOTEL® evaluations are completely voluntary; hotels must request to be reviewed. The ECOTEL® program was originally funded largely by HVS Eco Services' consulting practice. HVS Eco Services now requires an evaluation fee starting at $1,000. Fees are based on the size of the hotel and are negotiable to accommodate smaller hotels that might have difficulty affording the evaluation. Once the evaluation is completed, HVS Eco Services' consulting practice can be further contracted to provide expertise on improving a hotel's environmental performance.

Program Methodology

The ECOTEL® Certification program was a natural extension of HVS Eco Services' hotel consulting practice into the environmental field. The ECOTEL® performance criteria were determined through consultation with such hospitality and environmental organizations as the Rocky Mountain Institute, the Ecotourism Society, Certified Utility Consultants, and Cornell University's School of Hotel Administration. The criteria are proprietary information of HVS Eco Services, and are therefore not disclosed to the public. However, a summary of the criteria is available. The criteria cover such areas as the extraction and processing of raw materials, manufacturing, transportation and distribution, product uses, reuse, maintenance, recycling, final disposal, ingredient or materials restrictions, and the environmental performance of production processes.

A numerical rating system, used to quantify the findings, is adapted for each hotel's size and location. It consists of a primary, secondary, and tertiary qualifying round. Hotels must receive all of the primary qualifying points in order to be considered for the secondary points, 75 percent of which must be attained to achieve the ECOTEL® Globe Award. This 75 percent requirement allows for flexibility within the prescribed standards by rewarding hotels for good environmental performance despite differences among individual programs. The tertiary round awards bonus points to those hotels with outstanding environmental programs.

ECOTEL® evaluates hotels in any of the five performance categories listed below, per the hotel's request; most request all five. A hotel must earn the Globe Award in at least one category to be considered an "ECOTEL®." The categories are as follows:

Solid Waste Management
Energy Management
Water Conservation and Preservation
Employee Education and Community Involvement
Legislative Compliance and Native Land Preservation

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Product Categories

Hotels

THE ENERGY GUIDE: HOUSEHOLD APPLIANCE ENERGY EFFICIENCY LABELING

Introduction

In December 1975, Congress passed the Energy Policy and Conservation Act (EPCA), the primary purpose of which is to "conserve energy by enabling consumers purchasing appliances to compare the energy usage of competing models" (US Federal Trade Commission, *The Appliance Labeling Rule*, 1997). EPCA requires that Energy Guide labels be placed on certain new home appliances including refrigerators, refrigerator-freezers, freezers, water heaters, clothes washers, dishwashers, furnaces, room air conditioners, central air conditioners, and heat pumps. These appliances are covered under EPCA because their energy costs can vary greatly, depending on their construction and design. EPCA also directed standards and labeling for humidifiers and dehumidifiers, clothes dryers, direct heating equipment, kitchen ranges and ovens, and television sets. The Federal Trade Commission (FTC), which shares responsibility for EPCA's implementation, did not include these products in the labeling program, however, stating that there were insufficient differences in energy efficiency among different models.

The National Appliance Energy Conservation Act (NAECA) of 1987 amended EPCA by, among other things, establishing minimum efficiency standards for all EPCA products. In 1988, National Appliance Energy Conservation amendments added fluorescent lamp ballasts. The Energy Policy Act of 1992 added general service fluorescent lamps and general service incandescent lamps, including reflector lamps. It also expanded EPCA to address water efficiency issues by specifying water flow labeling requirements for showerheads, faucets, water closets, and urinals. In 1994 the FTC extended the rule to include pool heaters and certain other water heater types.

Program Summary

Under EPCA, the FTC was given responsibility for establishing the format of the Energy Guide labels, while the Department of Energy (DOE), then the Federal Energy Administration, was given responsibility for promulgating standardized test procedures and minimum efficiency standards, and conducting a consumer education program to complement the labeling program.

The original label design was announced by the FTC in 1979; it required the disclosure of an appliance's estimated annual operating cost as well as a comparison with similar models. For room air conditioners and furnaces only, where variations in climate make a national average meaningless, an energy rating figure was required on the labels. For all other appliances covered by the law, it was required that labels disclose the cost of the average annual energy use for the appliance in dollars and a comparison with similar models. The FTC has since revised the format of these labels. Critics pointed out that expressing the energy use in dollars could be confusing because the cost of energy changes over time. When energy prices changed by more than 15 percent from the previous baseline, the FTC required that new Energy Guide labels incorporate the

new energy prices into their operating cost figures. This meant that two identical appliances on the same storeroom floor could be labeled with two different operating costs, if energy prices changed between manufacture dates. Comparisons among different models and brands were also thrown off by this discrepancy, creating confusion among consumers.

On July 1, 1994, partly in response to this criticism, the FTC announced amendments to the labeling requirements to make the label more "user-friendly." Among other things, the new specifications require that primary energy use disclosures, previously given as estimated operating cost, now be given in units of energy consumed per year. Estimated yearly operating cost is still given in some cases, but it appears as a smaller figure toward the bottom of the label, allowing the energy consumption figure to dominate as the primary figure on the label. Where given, the operating cost is accompanied by the energy price used in its calculation, making explicit the fact that the cost is simply a snapshot indicator and does not take in to account energy cost fluctuation over time. Under this system, every appliance's primary energy use disclosure is a unique, fixed figure. Although the labels vary somewhat for different types of appliances, they all contain specific information on energy efficiency and costs. The current rule requires that, for covered products other than fluorescent lamp ballasts, lamps, and plumbing fixtures, the text of the labels include:

1. the manufacturer, model number, type of appliance, features, and size, all listed at the top of the label;
2. a number in the center of the label which is either the appliance's energy consumption per year or the energy efficiency rating (for room and central air conditioners, heat pumps, and furnaces). Energy consumption may be given in kilowatt-hours, therms, or gallons per year, depending on the type of fuel consumed. Energy efficiency ratings are presented such that the higher the number, the more efficient the appliance and the less it costs to operate;
3. the "range of comparability" published by the FTC, showing the energy consumption or energy efficiency rating of the most and least efficient models of similar size and features, placed at either end of a bar below the appliance's energy use figure. This figure is marked with a triangle at the appropriate position along the bar to convey how the appliance compares with similar models; and
4. for most products, a boxed number at the bottom giving the appliance's estimated yearly operating dollar cost based on the national average fuel cost in effect at the time the range of comparability specified for that product was published. This national fuel cost and any other assumptions used to calculate the figure are stated below the box. For central air conditioners, heat pumps, and furnaces, annual operating cost information does not appear on the label, but rather must be given separately on fact sheets available through the manufacturer or in product directories compiled by industry trade associations.

Products not included in the above descriptions must meet different labeling requirements. Fluorescent lamp ballasts and luminaries containing such ballasts must be labeled with an encircled "E" indicating compliance with DOE minimum efficiency standards. Covered lamps must be labeled with such figures as the electrical power consumed, its light output, and lamp life

expressed in hours. Manufacturers of showerheads, faucets, toilets, and urinals must disclose their products' flow rate in terms of water used per flush, minute, or cycle.

Program Methodology

The primary purpose of EPCA is to "conserve energy by enabling consumers purchasing appliances to compare the energy usage of competing models" (US Federal Trade Commission, *The Appliance Labeling Rule*, 1997). To accomplish this goal most efficiently, the FTC included only those appliances for which there was a significant potential for a reduction in energy use due to altered consumer purchasing behavior. For this reason, only those appliances that showed significant differences in energy efficiency among different models were included in the Energy Guide program.

As an information disclosure requirement, the Energy Guide program does not set product criteria or evaluate individual products. The FTC does, however, establish the format of the labels. It also requires that manufacturers of regulated appliances submit their energy consumption or energy efficiency rating as determined through standardized DOE test procedures. This enables the FTC to publish the annual range of comparabilities for each appliance. When the range of comparability changes by more than 15 percent, the FTC requires that manufacturers print new labels incorporating the new range.

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Product Categories

Refrigerators
Refrigerator-freezers
Freezers
Room air conditioners
Central air conditioners
Heat pumps
Water heaters
Furnaces
Dishwashers
Clothes washers
Fluorescent lamp ballasts
General service fluorescent lamps
General service incandescent reflector lamps
Medium base compact fluorescent lamps
Showerheads
Faucets
Toilets
Urinals
Pool heaters

US EPA ENERGY STAR PROGRAMS

Introduction

The U. S. Environmental Protection Agency's (EPA) ENERGY STAR program is an umbrella of voluntary programs consisting of: the ENERGY STAR Labeling program, the ENERGY STAR New Homes program, the ENERGY STAR Buildings program and the ENERGY STAR Small Business program. All the programs are administered by EPA's Atmospheric Pollution Prevention Division; the Labeling program is jointly run by the EPA and the US Department of Energy (DOE).

The overall goal of the various ENERGY STAR programs is to reduce air pollution from the burning of fossil fuels (needed to generate the large quantities of electricity used in the United States) by promoting the development and use of energy efficient products. ENERGY STAR Partners (e.g., manufacturers, private sector industries, government, public and private organizations) volunteer to join one or more of the ENERGY STAR programs and pledge to either make or use energy efficient products. It is hoped that the cost savings realized by the use of energy efficient products will encourage more companies and other organizations to join the program, and therefore prompt more manufacturers to produce these types of products in larger volume and at lower prices.

Each of the programs will be discussed briefly below with more emphasis on the ENERGY STAR Labeling Program.

Recent Developments

The ENERGY STAR Labeling program is in the process of expanding to include televisions, video cassette recorders (VCRs), and windows. EPA has decided to label consumer electronics because, according to the US Energy Information Administration, consumer electronics and small electrical appliances are expected to account for about 90 percent of the projected increase in carbon dioxide emissions from residential and commercial buildings over the next 20 years. Manufacturers are now signing agreements to label Televisions and VCRs, and it is expected that these labeled products will be on the market in early 1998. The DOE has chosen to label windows, which in many homes are a significant factor in heating and cooling losses and therefore energy consumption.

Program Summaries

ENERGY STAR Labeling Program

As mentioned above, the ENERGY STAR Labeling program is funded and managed jointly by the US EPA and the US Department of Energy (DOE). The program was created to provide customers with an easy way to recognize energy efficient products by labeling these products with the

ENERGY STAR logo. Manufacturers and retailers participating in the ENERGY STAR Labeling program sign a Memorandum of Understanding (MOU) with EPA and DOE agreeing to produce, label, and sell products that meet the product specifications. EPA and DOE establish the criteria, and the agencies then allow manufacturers and retailers to use the ENERGY STAR logo, a single-attribute seal of approval, on products and in advertising. As part of this program, EPA is implementing a nationwide consumer education awareness campaign to educate users about these products and the label.

Though there are plans to expand the labeling program in 1998, currently there are seven product categories that are part of the labeling program. These include: office equipment, residential light fixtures, exit signs, transformers, residential heating and cooling equipment, insulation, and major household appliances. Some of these will be discussed briefly below.

ENERGY STAR Office Equipment Program:

The Office Equipment program was the first of the ENERGY STAR programs to label products. It was launched in June 1992, and is designed to promote the development and use of energy-efficient office equipment. Manufacturers of computers, monitors, printers, fax machines, and copiers are eligible to join the program if they produce energy-efficient versions of these products. The basis of this program is that each participating company agrees to introduce computers, monitors, printers, fax machines, or copiers, that switch to a low power state when left idle. For example, ENERGY STAR computers drop their power draw to 30 watts or less, a 50 to 75 percent reduction compared to normal power draw, by automatically turning to a "sleep" mode when not in use. Similarly, ENERGY STAR monitors power down to 30 watts or less when not in use by turning to a sleep mode. Printers power down to 15 to 45 watts when not in use. ENERGY STAR fax machines have a power-management feature that can reduce energy costs by 50 percent. They also have a sleep mode and double-sided faxing capabilities, thereby cutting down on paper costs. ENERGY STAR copiers automatically turn off after a period of inactivity.

An independent study by the US DOE Lawrence Berkeley Laboratories estimates that US businesses could save almost $1 billion per year in energy costs, or $900 million, by the year 2000, by converting to energy-efficient office equipment.

Almost all major manufacturers of these products have joined the program. Companies that market qualifying products may use the EPA ENERGY STAR logo to identify those products. EPA emphasizes that the purpose of the ENERGY STAR logo is to promote energy efficiency only, and that EPA does not endorse any particular product. For office equipment users, however, joining the program and buying energy efficient products is voluntary. Executive Order 12873 (which addresses Federal Acquisition, Recycling, and Waste Prevention), however, directs the various agencies of the federal government, the largest purchaser of office equipment in the world, to purchase ENERGY STAR computers, monitors, and printers, provided that they are available commercially and meet performance standards.

ENERGY STAR Residential Light Fixtures Program:

Established in June 1997, the ENERGY STAR Residential Light Fixtures Program is one of the newest programs under the ENERGY STAR Labeling program. Partners agree to manufacture energy-efficient lighting fixtures for installation in homes, especially in high-use sockets, such as in kitchens, living rooms, and outdoor areas. ENERGY STAR lighting fixtures are 'dedicated' fixtures, which means that they are designed to operate only energy-efficient sockets. These fixtures start immediately, (i.e. they don't need to warm up), operate quietly, and may also have dimming or switching features. Outdoor fixtures automatically turn off in daylight and some fixtures have motion detector on-off features.

ENERGY STAR Exit Signs Program:

In June 1996, EPA launched the ENERGY STAR Exit Signs Program to develop energy-efficient exit signs. Manufacturers involved in this program produce energy-efficient exit signs that meet the EPA ENERGY STAR guidelines. Manufacturers can then use the ENERGY STAR logo on their product. Manufacturers do their own testing to ensure that products meet the guidelines.

ENERGY STAR exit signs operate on less than 5 watts of electricity per face. In addition, they have been tested by the manufacturer and are found to have levels for visibility and luminance that exceed those required by the National Fire Protection Agency's Life Safety Code. It is estimated that by the year 2000, these exit signs could save companies a cumulative 800 million kilowatts of electricity, an estimated cost savings of $70 million each year.

ENERGY STAR Transformers Program:

This program is a partnership between the EPA and electric utility companies and transformer manufacturers. The program was established in April 1995. By joining the program, utility companies agree to buy cost-effective, high-efficiency transformers for their electricity distribution systems. Manufacturers of transformers also agree to produce ENERGY STAR transformers and agree to market them to electric utilities. Even though electric transformers are already about 98 percent efficient, it is estimated that ENERGY STAR transformers can easily reduce energy loss levels by 10 to 40 percent. Additionally, an estimated 3.4 billion kilowatt hours of savings is projected with the use of ENERGY STAR transformers.

ENERGY STAR Residential Heating and Cooling Program:

In this program, manufacturers agree to produce and market high-efficiency heating and cooling equipment. The program was established in April 1995. ENERGY STAR-labeled products under this program include furnaces, air conditioners, geothermal heat pumps, gas-fired heat pumps,

thermostats, and boilers. Further, EPA is working with the financial industry to encourage the development of lower cost commercial loans to purchasers of ENERGY STAR heating and cooling equipment.

ENERGY STAR Homes Program

The ENERGY STAR Homes Program was established in April 1995. It is a partnership between EPA and home builders and developers. Builders and developers who join the program agree to build energy-efficient homes. Guidelines for these homes are detailed in the ENERGY STAR Homes MOU. Energy efficient lighting systems, heating, ventilation, and air condition systems, as well as energy efficient insulation, are installed in ENERGY STAR homes.

ENERGY STAR Homes can be advertised as such in real estate listings and with real estate brokers. Home buyers may also inquire about energy-efficiency upgrades in their existing homes. It is estimated that home buyers can cumulatively save an estimated $1.80 billion in utility bills by purchasing ENERGY STAR Homes.

ENERGY STAR Buildings and Green Lights Program

The ENERGY STAR Buildings and Green Lights Program was established in 1991 and is the first of the ENERGY STAR programs. It is aimed at encouraging the widespread use of energy-efficient lighting. Partners agree to install energy-efficient lighting "where profitable as long as lighting quality is maintained or improved." Federal agencies that are partners in the program have until the year 2005 to complete lighting upgrades in their buildings.

In April 1995, the Green Lights program was expanded in the ENERGY STAR Buildings Program aimed at maximizing energy efficiency building-wide. In order to become a partner, commercial building owners agree to upgrade their building to become more energy efficient. Partners are encouraged to follow a five-step upgrade procedure: 1) installing energy efficient lighting; 2) completing a general building tune-up; 3) performing load reductions; 4) undertaking fan system upgrades; and 5) upgrading heating plant and cooling systems. The MOU in this program outlines in detail each of the requirements under these stages as well as EPA's and the partner's responsibilities.

Participants in the ENERGY STAR Green Lights and Buildings Program include corporations, small businesses, universities, health care facilities, non-profit organizations, school districts, and federal and state governments. Since the beginning of the Green Lights program in 1991, participation has grown from 39 members to 2,400 in 1997.

ENERGY STAR Small Business Program

Launched in June 1996, the ENERGY STAR Small Business Program is a partnership between EPA and small businesses. The program provides technical assistance and information to its partners in order for them to find ways to earn energy-efficient simple pay backs of three years or less. Small businesses or non-profit organizations can join the program if they have facilities of 100,000 square feet or less, and if they agree to upgrade these facilities to make them energy-efficient. Additionally, partners agree to purchase ENERGY STAR-labeled products. EPA will provide partners with workshops, seminars, a hotline, and a Web site on available energy-efficient upgrades, as well as publicize success stories. It is estimated that typical small business can save from 30 to 50 percent of their energy bills by conducting energy efficiency upgrades. As of August 1997, 100 small businesses had joined the program.

Program Methodology

As mentioned above, all of the ENERGY STAR programs aim at reducing air pollution through the use or production of energy-efficient products. Product categories are therefore evaluated according to their environmental impacts in terms of their energy use. Similarly, businesses are assessed according to their energy-efficient building management.

The ENERGY STAR program reports that when choosing product categories and establishing product standards for the ENERGY STAR Labeling program, previous literature about the product category, independent testing and auditing, and information provided by participating producers are used. Additionally, the program conducts generic/modeled environmental impact assessments when choosing product categories.

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Product Categories

ENERGY STAR Labeling Program

- Computers
- Monitors
- Fax Machines
- Photocopiers
- Printers
- Exit Signs
- Residential Light Fixtures
- Furnaces
- Air conditioners
- Geothermal heat pumps
- Gas-fired heat pumps
- Thermostats
- Boilers
- Transformers

FUEL ECONOMY INFORMATION PROGRAM

In 1975, Congress passed the Energy Policy and Conservation Act (EPCA), which established Corporate Average Fuel Efficiency (CAFE) standards as well as a testing, labeling, and information program to assist consumers in purchasing new cars. One aspect of the information program was the *Gas Mileage Guide*, a publication listing the fuel economy of cars manufactured at a given time. Car dealers were required to have the Guide available for customers.

The law also required a label to appear in the windows of new cars that lists the miles-per-gallon (MPG) of the car for city and highway driving, the estimated annual fuel cost associated with its operation, and the fuel economy of comparably-sized models. Such labeling began in 1974 with a voluntary program administered by the EPA and the Federal Energy Administration (FEA), a precursor of the Department of Energy. The EPCA made the program mandatory as of March 1976. Although EPA is responsible for testing cars and preparing the *Gas Mileage Guide* and the MPG labels, responsibility for other aspects of the fuel economy program is shared with three other federal agencies: Department of Energy, Department of Transportation, and the Federal Trade Commission.

The labeling program had a number of problems initially with the measurement of vehicle mileage. A Congressional Committee hearing noted, "As the public quickly discerned, the EPA mileage figures were not an accurate measure of on-road performance" (US House, 1980). According to Elder Bontekoe of EPA's Office of Mobile Sources, the tests were not run according to "real world" conditions and considerably overestimated the actual mileage automobiles could be expected to achieve. In response, in 1985 a formula was worked out to adjust the mileage for actual city and highway driving conditions. This new system has been found to be fairly reliable (Bontekoe, 1993).

A few changes have been made to the format of the label since the program's inception. Initially showing both highway and city ratings for MPG, 1979 EPA regulations removed the higher (and less accurate) highway rating, and changed the wording to "Estimated MPG." Car makers were still allowed to use both ratings in advertising, so there was a concern that consumers were "being misled by nightly television advertisements and auto showroom displays featuring extravagant gasoline mileage claims based on their government's own testing program" (US House, 1980). After changes were made in 1985 to improve the accuracy of the tests, labels again bear estimated MPG ratings for city and highway use.

A study performed in 1976 found that 72 percent of new car buyers were aware of the Fuel Economy Information Program and more than half had seen the mileage label on the car they bought (while only 7 percent were aware of the *Gas Mileage Guide*). Also, buyers who were aware of the label bought cars with higher mileage than did unaware buyers, with the mileage of their new car more than 20 percent higher than their old vehicle. Unaware buyers achieved almost no increase in mileage. On the other hand, 64 percent of buyers did not believe the MPG estimates

(Abt, 1976). Two important considerations for interpreting this study are that the OPEC oil embargo, in the winter of 1973-74, was fresh in car buyers' minds at that time, and that the program was still quite new.

The effectiveness of the EPA gas mileage labeling program is largely dependent on public opinions toward gasoline use and conservation. Due to the low price of gasoline in recent years, mileage has become a less important consideration for many car buyers. "We perceive that the numbers are well accepted and the program has a fair degree of recognition in the marketplace," said Mr. Bontekoe. "A lot of people don't *care*, but they do seem to be paying attention."

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PESTICIDE LABELING UNDER THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT

Introduction

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), first enacted in 1947 and subsequently amended, requires the registration of pesticides and pesticide producers with the US Environmental Protection Agency. Pesticides, as defined by FIFRA, are substances designed to prevent, destroy, repel, or mitigate any pests, or to regulate, defoliate, or desiccate plants.

Each of the 600-odd pesticide active ingredients in use today must pass a set of health and safety standards in order to be approved for registration, or in the case of chemicals registered before 1984, a re-registration. (Tweedy et al., 1991). As part of registration or reregistration, the labeling of each product is reviewed and approved by the Agency.

Program Summary

Under EPA's Consumer Labeling Initiative (CLI), EPA and several stakeholders are evaluating the need for improvements to FIFRA labels for pesticides and household cleaners. See the write-up on CLI in this section for details.

FIFRA requires labels to appear on the containers of every pesticide product sold in the US, and imposes standards and restrictions regarding the wording and format (40 CFR §156.10). As outlined in the Code of Federal Regulations (CFR), a pesticide label must clearly and prominently display the following information:

a) The name, brand, or trademark under which the product is sold;
b) The name and address of the producer, registrant, or person for whom produced;
c) The net contents (weight or measure);
d) The product registration number;
e) The producing establishment number;
f) An ingredient statement;
g) Warnings and precautionary statements;
h) The directions for use; and
i) The use classification(s) (restricted use).

All required label text must be set in 6-point type or larger, and must appear in English. The Agency, however, may require additional text in other languages if it is considered necessary in protecting the public health.

The Office of Pesticide Programs (OPP) at EPA reviews each pesticide label individually to ensure appropriateness and accuracy. (Frane, 1993) The particular environmental or health effects of a

pesticide may prompt EPA to require additional warnings or messages to be included on its label (e.g., groundwater advisory statements, chronic hazard warnings).

The various components of the label are discussed in more detail below. Label requirements as described below are taken from the 40 CFR §156.10. The regulations set only broad guidance on label content. In practice, the Agency has wide latitude to require, or accept, statements that deviate from the regulations, and many statements that are accepted reflect variations based on product type and use.

A. Name, brand, or trademark: The name that appears on the label must be registered with the EPA, and not be false or misleading.

B. Name and address of the producer, registrant, or person for whom produced: If the registrant's name that appears on the label is not the producer of the pesticide, it must be qualified by appropriate wording such as "*Packed for* ***," "*Distributed by* ***," etc.

C. Net contents (weight or measure): The net weight or measure, exclusive of wrapping materials, must be stated as an average content unless explicitly stated as a minimum quantity.

D. Product registration number: The EPA registration number (often abbreviated to "EPA Reg. No.") assigned to the pesticide product at the time of registration must appear on the label.

E. Producing establishment number: The producing establishment number, preceded by the phrase "EPA Est.," must appear on the label or on the immediate container.

F. Ingredients statement: The ingredients statement is normally required on the front panel of the label. If there is an outside container or wrapper through which the label cannot be read, then the ingredient statement must also appear on that container or wrapper.

The label of each pesticide product must bear a statement that contains the name and percentage by weight of each active ingredient, and the total percentage by weight of all inert ingredients. Each ingredient may be referred to by its accepted common name, if there is one. If no common name has been established, then the chemical name must be used. Trademarked names not accepted as common names are not allowed.

Pesticide products that contain one or more chemical components that change significantly over time must also include a statement that reads: "*Not for sale after* [date]."

G. Warning and precautionary statements:

Required warning and precautionary statements regarding toxicological hazards to humans fall into

two groups: those required on the front panel and those that may appear elsewhere. The child hazard warning and the appropriate human hazard signal word (see below) must appear on the front panel of a pesticide label. The human hazard signal word also appears elsewhere on the label. Other warnings and messages, including the first aid or statements of practical treatment (except in cases of extremely toxic products), health and environmental precautionary statements, and physical and chemical hazard statements, may appear elsewhere on the label.

1. Child hazard warning

Except for those products deemed safe for use on children or infants, or where the possibility of contact with children is exceedingly small, all pesticide product labels must bear on the front panel the warning "*Keep Out of Reach of Children*."

2. Toxicity Categories

The text required on the front panel of the label is determined by the Toxicity Category of the pesticide product. A pesticide is assigned a Toxicity Category based on its highest hazard potential in any of the following indicators listed in Table 1:

Table 1: Toxicity Category Definition				
Hazard Indicators	Toxicity Categories			
	I	II	III	IV
Oral LD_{50}	up to and including 50 mg/kg	from 50 thru 500 mg/kg	from 500 thru 5000 mg/kg	greater than 5000 mg/kg
Inhalation LC_{50}	up to and including 0.05 mg/liter	from 0.05 thru 2 mg/liter	from .5 thru 2 mg/liter	greater than 2 mg/liter
Dermal LD_{50}	up to and including 200 mg/kg	from 200 thru 2000 mg/kg	from 2000 thru 20,000 mg/kg	greater than 5,000 mg/kg
Eye Effects	Corrosive (irreversible destruction of ocular tissue) or corneal involvement or irritation persisting for more than 21 days	Corneal involvement or irritation clearing in 8-21 days	Corneal involvement or irritation clearing in 7 days or less	Minimal effects clearing in less than 24 hours
Skin Effects	Corrosive (tissue destruction into the dermis and/or scarring)	Severe irritation at 72 hours (severe erythema or edema)	Moderate irritation at 72 hours (moderate erythema)	Mild or slight irritation (no irritation or slight erythema)
NOTES: LD_{50} is the lethal dose at which 50 percent of the animals in lab testing die. LD_{50} is measured in mg pesticide per kg bodyweight. LC_{50} is the lethal concentration at which 50 percent of the animals in lab testing die. LC_{50} is measured in mg pesticide per liter of air. SOURCE: *Consumer's Research*, July 1992; 40 CFR §156.10				

3. Human Hazard Signal Words

Pesticide labels must bear specific signal words, depending on the pesticide's assigned Toxicity Category.

A pesticide that meets the criteria of Toxicity Category I must bear the signal word *"Danger"* on the front panel of its label. In addition, if the product was assigned to Toxicity Category I based on its oral, inhalation, or dermal toxicity, the label must also bear the word *"Poison"* in red on a background of distinctly contrasting color and the skull and crossbones symbol must appear in close proximity to the word *"Poison."*

A pesticide meeting the criteria of Toxicity Category II must bear the signal word *"Warning"* on the front panel of its label.

A pesticide meeting the criteria of Toxicity Category III or IV must bear the signal word *"Caution"* on the front panel of its label.

4. First Aid (Statements of Practical Treatment)

For pesticides in Toxicity Category I, a first aid statement (or statement of practical treatment) is normally required on the front panel, although in practice reasonable variations are permitted by EPA. For other pesticides, first aid statements are not required on the front panel, but must appear elsewhere on the label.

5. Other Required Warnings and Precautionary Statements

Other appropriate warnings and precautionary statements must appear on the label under the general heading of "Precautionary Statements," and under the subheadings of "Hazard to Humans and Domestic Animals," "Environmental Hazard," and "Physical or Chemical Hazard."

Typical precautionary statements indicating hazard to humans and domestic animals are listed in Tables 2 through 8 below, and are arranged by Toxicity Category. Other statements are also used -- there is considerable variability in hazard statements.

If a pesticide is found to be potentially hazardous to non-target organisms (excluding humans and domestic animals), the text on its label must include precautionary statements describing the nature of the hazards and the appropriate precautions to avoid problems. For example, for a pesticide intended for outdoor use, which contains an agent with an acute oral LD_{50} of 100 or less, the label must read, *"This Pesticide is Toxic to Wildlife."* Other statements address toxicity to birds, fish, and aquatic organisms.

Finally, for chemical or physical hazards, the required precautionary statements are listed below in Table 9.

H. Directions for use

All pesticide labels must have printed on them detailed use instructions or references to accompanying instruction leaflets.

Table 2: Hazard to Humans and Domestic Animal Precautionary Statements		
Toxicity Category	Precautionary statement by Toxicity Category	
	Oral, inhalation, or dermal toxicity	Skin and eye local effects
I	Fatal (poisonous) if swallowed [inhaled or absorbed through skin]. Do not breathe [vapor, dust or spray mist]. Do not get in eyes, on skin, or on clothing [Front panel statement of practical treatment required].	Corrosive, causes eye and skin damage [or skin irritation]. Do not get in eyes, or skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. [Appropriate first aid statement required.]
II	May be fatal if swallowed [inhaled or absorbed thru the skin]. Do not breathe vapor [dust or spray mist]. Do not get in eyes, on skin, or on clothing [Appropriate first aid statements required.]	Causes eye [and skin] irritation. Do not get in eyes, on skin, or on clothing. Harmful if swallowed. [Appropriate first aid statement required.]
III	Harmful if swallowed [inhaled or absorbed thru the skin]. Avoid breathing vapor [dust or spray mist]. Avoid contact with skin [eyes or clothing]. [Appropriate first aid statements required.]	Avoid contact with skin, eyes, or clothing. In case of contact immediately flush eyes or skin with plenty of water. Get medical attention if irritation persists.
IV	[No precautionary statements required.]	[No precautionary statements required.]
SOURCE: 40 CFR §156.10.		

Table 3: Acute Oral Toxicity Study*		
Toxicity Category	Signal Word	Precautionary Statements and Personal Protective Equipment
I	DANGER Skull & Crossbones required	Fatal if swallowed. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.
II	WARNING	May be fatal if swallowed. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco.
III	CAUTION	Harmful if swallowed. Wash thoroughly with soap and water after handling.
IV	CAUTION	No statements are required. However, if the registrant chooses to use category III labeling that is acceptable.

*Products Containing 4% or more of methanol: Add the following to the precautionary statements: "Methanol may cause blindness."

Table 4: Acute Dermal Toxicity Study		
Toxicity Category	Signal Word	Precautionary Statements and Personal Protective Equipment
I	DANGER Skull & Crossbones required	Fatal if absorbed through skin. Do not get in eyes, on skin, or on clothing. Wear protective clothing and gloves (specify protective clothing and type of gloves). Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Remove contaminated clothing and wash before reuse.
II	WARNING	May be fatal if absorbed through skin. Do not get in eyes, on skin, or on clothing. Wear protective clothing and gloves (specify protective clothing and type of gloves). Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco. Remove contaminated clothing and wash clothing before reuse.
III	CAUTION	Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.
IV	CAUTION	No statements are required. However, if the registrant chooses to use category III labeling that is acceptable.

Table 5: Acute Inhalation Toxicity Study		
Toxicity Category	Signal Word	Precautionary Statements and Personal Protective Equipment
I	DANGER Skull & Crossbones required	Fatal if inhaled. Do not breathe (dust, vapor, or spray mist).* [Identify specific respiratory protective device approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health.]** Remove contaminated clothing and wash clothing before reuse.
II	WARNING	May be fatal if inhaled. Do not breathe (dust, vapor or spray mist).* Wear a mask or pesticide respirator jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health. Remove contaminated clothing and wash clothing before reuse.
III	CAUTION	Harmful if inhaled. Avoid breathing (dust, vapor or spray mist).* Remove contaminated clothing and wash clothing before reuse.
IV	CAUTION	No statements are required. However, if the registrant chooses to use category III labeling that is acceptable.

* Choose the word which appropriately describes the product during use.
** Refer to Section to determine the specific respiratory protective device. This section can be used for both WPS and Non-WPS products.

Table 6: Primary Eye Irritation Study		
Toxicity Category	Signal Word	Precautionary Statements and Personal Protective Equipment
I	DANGER	Corrosive.* Causes irreversible eye damage. Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses).** Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.
II	WARNING	Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses).** Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.
III	CAUTION	Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling.
IV	CAUTION	No statements are required. However, if the registrant chooses to use category III labeling that is acceptable.

*The term "corrosive" is not required if only eye irritation (redness) was observed during the study and was still present at day 21.

**Use the term "safety glasses" in the precautionary labeling for residential use products.

Table 7: Primary Skin Irritation Study		
Toxicity Category	Signal Word	Precautionary Statements and Personal Protective Equipment
I	DANGER	Corrosive. Causes skin burns. Do not get in eyes or on clothing. Wear protective clothing and gloves (specify protective clothing and type of gloves)*. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.
II	WARNING	Causes skin irritation. Do not get on skin or on clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.
III	CAUTION	Avoid contact with skin or clothing. Wash thoroughly with soap and water after handling.
IV	CAUTION	No statements are required. However, if the registrant chooses to use category III labeling that is acceptable.

*The need for rubber (homeowner products) or chemical-resistant gloves must be determined on an individual basis. Some products cause blistering if confined under clothing.

Table 8: Dermal Sensitization Study	
Study Results	Precautionary Statement
Product is a sensitizer or is positive for sensitization.	Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.
Product is not a sensitive or is negative for sensitization.	No labeling is required for this hazard.

Table 9: Physical or Chemical Hazard Precautionary Statements	
Flash Point	Required Text
(A) PRESSURIZED CONTAINERS	
Flash point at or below 20°F, if there is a flashback at any valve opening.	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
Flash point above 20°F and not over 80°F or if the flame extension is more than 18 in long at a distance of 6 in from the flame.	Flammable. Contents under pressure. Keep away from heat, sparks, and open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
All other pressurized containers.	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
(B) NON-PRESSURIZED CONTAINERS	
At or below 20°F	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
Above 20°F and not over 80°F	Flammable. Keep away from heat and open flame.
Above 80°F and not over 150°F	Combustible. Do not use or store near heat or open flame.
SOURCE: 40 CFR §156.10	

The directions must appear under the heading "*Directions for use,*" and include the following:

a) the statement of use classification (see section I, below);
b) the statement, "*It is a violation of Federal law to use this product in a manner inconsistent with its labeling;*"
c) the sites of application (e.g., crops, lawns, etc.), or objects to be treated;
d) the target pests;
e) the dosage rate;
f) the method of application;
g) the proper frequency and timing of application;
h) the reentry statement (if needed), which specifies the length of time that must pass before people can reenter a treated area;
i) the disposal directions; and
j) any use limitations or restrictions required to prevent unreasonable adverse effects.

I. Use classification

Every registered pesticide has one or more EPA-designated uses. Each of these uses is evaluated for hazard potential and may be classified for restricted use if necessary to protect human health or the environment.

1. General Use Pesticides

Unclassified products, with one exception, do not bear the term "General Use" as discussed in 40 CFR 15.160. The one exception involves products containing the active ingredient, chlorine gas. These products are the only products which bear the classification "General Use."

2. Restricted Use Classification

Products designated for restricted use only must include the words "*Restricted Use Pesticide"* on the front panels of their labels. A statement describing the nature of the restrictions and the reason for the restriction must appear directly below the above statement. For example, "Due to oncogenicity," "For retail sale and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification." For each specific pesticide, other additional restriction statements may be required by EPA.

Enforcement

According to FIFRA Sec. 2(q) and 12 (Federal Environmental Laws, 1988), failure on the part of the pesticide producer or registrant to comply with labeling requirements may be considered "misbranding" of the pesticide. Sales or distribution of a misbranded pesticide constitutes an unlawful act. The Environmental Protection Agency may then cancel the registration, or bring criminal and/or civil charges against the registrant or producer of the pesticide.

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GREEN SEAL

Introduction

Green Seal is an independent, non-profit organization involved in environmental standard setting, product labeling, and public education in the United States. Established in 1989, Green Seal issues a third party, seal-of-approval to consumer products that "cause less harm to the environment than other similar products" (Green Seal, 1997). The Green Seal is available to both US and foreign companies. In addition, Green Seal also encourages companies and other large buyers to become members of Green Seal's "Environmental Partners Program" to develop environmentally sound procurement policies, and to pledge to buy environmentally preferable products.

As of August 1997, product standards or criteria had been developed for 88 product categories. Fifteen of these are currently undergoing final revisions after the public comment period that is part of Green Seal's standards/criteria finalization process. To date, approximately 300 products have been awarded the Green Seal. As of August 1997, Green Seal has certified products from several foreign manufacturers including three Canadian companies (producing newsprint paper, sanitary equipment, and engine oil), one Japanese company (producing a heat pump,) and one Korean company (producing a bleach product).

Recent Developments

In 1993 Green Seal started distinguishing between two types of award criteria. These award criteria are known as "product standards" or "product criteria," depending upon the product category. Product standards are award criteria for products that require more in-depth environmental impact or life cycle analysis. Standards are established for products that Green Seal considered to have greater environmental impacts and are, therefore, tested and assessed more comprehensively. In contrast, product criteria were established as a response to market interest (i.e., for product categories that manufacturers were interested in getting eco-certified). Product criteria are developed as a way to quickly certify product categories that are less complex or that are experiencing technological changes. Over time, however, the distinction between product standards and product criteria has become less significant for Green Seal.

Program Summary

Green Seal standards and criteria are developed on a category-by-category basis. Anyone, including industry, public interest groups, and the general public, may submit proposals for new product categories. Green Seal, however, makes the final decision as to which categories are chosen. Product categories are assessed based on a life cycle analysis. Once product categories are chosen, product standards and criteria are developed. Draft standards and criteria are sent for comment to relevant parties, such as manufacturers, trade associations, environmental and

consumer groups, and government officials, as well as to any member of the public who requests them. The comment period lasts for about 45 to 60 days.

Once the public comment period is completed, staff of the Green Seal Board of Directors finalizes the product standards and criteria and forwards them to the Environmental Standards Committee. The Environmental Standards Committee acts on behalf of Green Seal's Board of Directors in approving the final standards. Product criteria do not need the Board's approval and are sent directly for publication. Product standards and criteria are usually revised every three years to keep up with technological advances in product categories and to encourage continual environmental improvement.

Once the standards and criteria are published, manufacturers are encouraged to apply for the Green Seal. As part of the certifications process, manufacturers must demonstrate that they are in compliance with all applicable federal, state, and local environmental regulations. Manufacturers pay a product evaluation fee and a monitoring fee, which is based on a fixed price plus the additional estimated cost of laboratory tests and travel to the manufacturers' facilities. If the product meets Green Seal's standards/criteria, the manufacturer is given a contract to use the Green Seal label on its product(s), packaging, and in advertising, for as long as the product stays in compliance with the standards. Green Seal re-evaluates its product standards every three years.

Program Methodology

Green Seal's acceptance of a product category for its label is based on a life-cycle assessment of several products on the market. Green Seal makes assessments based on the environmental impacts during various stages of the products' life cycle. These include: raw material extraction, manufacturing, transportation and distribution, product use, and disposal. Additionally, products are assessed on their potential for reuse, their maintenance needs, potential for recycling, ingredients, and environmental performance during the production process. Green Seal's goals are to set standards and criteria that reduce one or more of the following: toxic chemical pollution, energy consumption, impacts on water resources, impacts on wildlife, natural resource consumption, impacts on the atmosphere, and global warming. Products within a category must also comply with minimum performance standards, i.e, they must perform at least as well as other products in their category which are considered less environmentally preferable.

In setting product standards, Green Seal collects information about the product category from previous literature and studies done on the product category, as well as from its own independent testing and studies. Additionally, Green Seal collects data from manufacturers and previous life-cycle assessments conducted by other ecolabeling programs. For example, Green Seal exchanged information with Canada's TerraChoice program and adopted several of its product standards.

Green Seal's standard-setting procedure is a transparent one. The public is given the opportunity to provide comments on the draft standards. The commentors' suggestions are often based on the

feasibility of meeting the proposed environmental standards, given the available technologies for the category. Once standards are finalized by the Environmental Standards Committee, commentators may appeal the standards if they feel that their comments were not addressed adequately. This is done through a body known as the Environmental Standards Council, made up of technical experts and academic scientists. Once appeals are taken into consideration, Green Seal publishes the final standards along with a document that lists all significant comments and Green Seal's responses.

Other Information

In addition to the labeling program, Green Seal has also established the "Environmental Partners Program." There are two aspects to the program. Environmental Partners (businesses, government agencies, and other organizations,) may join the program by agreeing to the Environmental Partners Pledge, thereby committing to buying environmentally preferable products and services as part of their procurement policies. Additionally, pledged Partners have to establish a recycling program in their offices. Alternatively, business, organizations, and government agencies may opt to subscribe to the program and simply receive information materials from Green Seal about environmentally preferable products. Green Seal provides all its Partners with monthly *Choose Green Reports*, which recommend specific environmentally preferable brands of products, and lists places these products can be purchased. As of August 1997, there are 461 organizations taking part in the program; 163 of these organizations have made the Environmental Partners Pledge. Partner organizations include federal, state, and local government agencies, private companies, and universities and colleges.

In addition to the *Choose Green Reports*, Green Seal has published the *Office Green Buying Guide* and *Greening Your Property*. The *Office Green Buying Guide* provides guidelines for businesses to set up environmentally preferable purchasing policies. Specifically, the *Office Green Buying Guide* provides information on types of products offices can consider buying. For example, the *Guide* encourages businesses to reassess the type of paper products they buy (e.g., buying papers made with recycled materials and fibers other than wood-pulp), or it may encourage purchasing energy-efficiency office equipment (e.g., Energy Star-labeled photocopiers, computers, and fax machines). In *Greening Your Property*, Green Seal provides similar guidance, specifically for the lodging (hotels and motels) industry, on developing their environmentally preferable purchasing policies and ways to engage in the notion of eco-tourism. The guide aims to educate the industry on ways to cost-effectively better their hotels' and motels' environments. In addition to *Greening Your Property*, Green Seal regularly contributes to the lodging industry's monthly magazine, *Lodging*, with articles on specific brands and product names.

Both the *Office Green Buying Guide* and *Greening Your Property* provide information on environmental considerations to keep in mind when purchasing products. Green Seal encourages businesses to consider the following characteristics of the products before making purchases: the products' life-cycle costs (e.g., cost of purchase, use, and disposal,) instead of simply the up-front

costs; durability; performance; energy and natural resources use; recyclability and recycled content; toxicity; biodegradability; and packaging. Additionally, guidance to businesses on ways to advertise to their employees, suppliers, and customers about their new environmental policies are provided.

Green Seal is also actively involved in coordination with other labeling programs. Green Seal and the Canadian TerraChoice program were the first two ecolabeling programs that urged for the establishment of the Global Ecolabelling Network (GEN). In fact, Green Seal chaired GEN during the first three years GEN was established. Green Seal has encouraged information exchange and harmonizing with other programs through GEN. Additionally, Green Seal participates in International Organization for Standardization (ISO) activities.

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Product Categories (number of awarded products in parentheses)

Final Product Standards

Electric chillers (100 tons to 2,000 tons rated capacity)
Clothes dryers
Clothes washers
Combination ranges
Electric or gas cooktops
Dishwashers
Freezers (30 CF or less)
Ovens
Refrigerators (39 CF or less)
Combination refrigerator-freezers (39 CF or less)
Engine oil
Reusable utility bags
General purpose cleaners
Compact fluorescent lamps
E26 medium screw ballast adaptors
E26 medium screw fluorescent self-ballasted lamps
E26 medium screw lamp holder conversion kits
Interior and exterior architectural coatings
Bathroom tissue
Blanks
Bond paper
Bristol paper
Business forms
Coated printing paper
Copy paper
Cover paper
Drawing paper
Facial tissue
Gift wrapping paper
Labels
Ledger paper
Lightweight printing paper
Manifold and onion skin paper
Newsprint and printed products manufactured from newsprint
Other printing and writing paper
Paper napkins

Paper towels
Tablet paper
Uncoated groundwood-free paper
Faucet aerators
Kitchen faucet
Lavatory faucet
Toilets
Electric storage heaters (20 to 120 gallons and 12 kW input)
Heat-pump heaters (max current rating of 24 amp. at 250 volts)
Gas storage heaters (20 to 100 gallons and 75,000 Btu/hr max input)
Oil-fired storage heaters (50 gallons or less and 105,000 Btu/hr max input)
Glazed exteriors doors
Skylights
Storm doors
Windows
Retrofittable window films

Final Product Criteria

Residential central air-conditioning systems (cooling capacity of 65,000 Btu/hr or less)
Split ductless air-source heat pumps (cooling capacity of 65,000 Btu/hr or less)
Alternative-fueled vehicles (CNG or electric)
Fleet vehicle maintenance
Powdered laundry bleach
Discrete informational labels for plastic parts
Passive infrared sensors
Ultrasonic sensors
Dual technology sensors
Audio and/or microwave sensors
Anti-corrosive paints
Paper products used in the preparation of food (coffee filters, baking paper and parchment)
Office copiers
Showerheads
Garden hoses
Sprinkler hoses

Product Categories under revision after the public comment period (all of these will be product standards once finalized)

Adhesives
Gap sealants
Weather proofing sealants
Tub and tile sealants

Through the wall air-conditioning units
Window air-conditioning units
Ceiling and close to ceiling luminaries
Exterior luminaries with photocell
Outdoor brackets and lanterns
Porch lights
Recessed downlights and wallwashers
Security lights
Task lights
Wall sconces and brackets
Toner cartridges for printing and reproduction equipment

EPA'S OZONE DEPLETING SUBSTANCE (ODS) WARNING LABEL

Introduction

Section 611 of Title VI of the Clean Air Act, as amended in 1990, requires "labeling of products that contain or were manufactured with class I or II [ozone depleting] substances" by May 15, 1993. Class I substances are chlorofluorocarbons (CFCs), halons, carbon tetrachloride, and 1,1,1-trichloroethane (methyl chloroform), while class II substances are hydrochlorofluoro-carbons (HCFCs). The text of the label reads: "WARNING: Contains (or "Manufactured with" if applicable) [*insert name of substance*], a substance which harms public health and environment by destroying ozone in the upper atmosphere."

Recent Developments

In an amendment promulgated on January 19, 1995, EPA added several exemptions in response to comments that the former rule placed burdens "on specific parties whose activities contribute no additional emissions of ozone-depleting substances." Examples include exemptions from the labeling requirement "when controlled substances are destroyed,... [and] for spare parts that are used in repair." The amendment also made some minor clarifying revisions on such issues as the labeling of waste. These changes were intended to "provide additional flexibility to the regulated community [while] in no way [compromising] the environmental goals and benefits of protecting public health through the labeling regulation" (60 FR 4010).

Program Summary

In 1977, "the Food and Drug Administration and the Consumer Product Safety Commission required marketers and importers of self-pressurized medical and consumer products that use a CFC propellant to label their products with a warning that such products may harm public health and the environment by reducing ozone in the upper atmosphere."[6] Soon afterward, CFC was banned as an aerosol propellant for all but "essential applications," thus making the FDA/CPSC warning label irrelevant on such consumer products.

The final rule implementing section 611 was promulgated by EPA on February 11, 1993. The rule prohibits the sale of "any container containing class I and class II substances, product containing class I substances and product manufactured with class I substances, unless it bears a warning statement indicating that the product contains or is manufactured with ozone-depleting substances." Before January 1, 2015, products containing or manufactured with class II substances may require labeling should "the Administrator [determine] that safe alternatives are available." After January 1, 2015, all products containing or manufactured with class I or II substances must be labeled (58 FR 8136).

[6] See the *Federal Register* April 29, 1977, 42 FR 22018, and August 24, 1977, 42 FR 42780.

"Products manufactured with class I substances can be temporarily exempted from the labeling requirements if EPA determines that there are no substitute products or manufacturing processes that (a) do not rely on the use of the class I substance, (b) reduce the overall risk to human health and the environment, and (c) are currently or potentially unavailable. All products must be labeled by 2015" (Labeling Subcommittee, "Meeting Summary").

"Products manufactured with" class I substances might include electronic parts washed in class I solvents or packaging, books, or sporting goods that use class I adhesives. A container of class I substances might be a can of CFC-12 intended for use in degreasing units or refrigeration equipment. Such refrigeration or degreasing units would then be considered "products containing class I substances."

Although a symbol featuring a globe within an octagon (a stop sign) was considered in the rule proposal, the final rule requires only the text of the warning above. EPA believed that "this symbol would substantially increase consumer understanding and recognition of the required warning and thus heighten the effectiveness of the label" (57 FR 1992). The agency was also concerned, however, that the cost of changing product labels "would outweigh the benefits of using the label" (58 FR 8136).

Section 611 also required that the warning be "clearly legible and conspicuous;" EPA proposed that it should appear on the "principle display panel," defined as the place on a product or package "where the consumer is likely to look for product information." After receiving comments on the proposal, EPA decided that, "In view of the broad diversity of products potentially affected by the labeling requirements...manufacturers will need some latitude as to where to place the labels" (58 FR 8136). Therefore, the final regulation reverts to the language of the Clean Air Act requiring the warning to be "clearly legible and conspicuous" wherever it is presented. Other labeling options such as hang tags, stickers, and supplemental printed materials are also acceptable.

At the time of the Clean Air Act Amendments in 1990, the US was committed to a phaseout of class I substances by the year 2000 (two years later for methyl chloroform), in accordance with the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer. In a November 1992 meeting in Copenhagen, the phaseout schedule for class I substances was accelerated to January 1996 (two years *sooner* for halons). Thus, the ODS warning label was in effect for fewer than three years before the class I phaseout was completed. The 1993 rule states, "The recent decision of the Protocol Parties to significantly accelerate the phaseout of the listed ozone-depleting substances reduces the importance of the labeling program....[When the phaseout was scheduled for the year 2000], the labeling requirements provided an incentive for manufacturers to move away from their use of such substances before 2000 in order to avoid any negative marketplace reaction. With the acceleration of the phaseout,...requiring products to be labeled is unlikely to significantly add to the manufacturers' incentive to switch to alternative substances." As a result, EPA streamlined the labeling requirements by rejecting a proposed pass-through requirement whereby any manufacturer that incorporates a labeled component into its product would be required to label its product. Instead, EPA defined "manufactured with," such that manufacturers

must label products only when "the manufacturer of the product itself used an ozone-depleting substance in manufacturing that product....The incorporation of that [labeled] product into another, however, [would] not necessitate a label" (58 FR 8136).

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CALIFORNIA PROPOSITION 65

Introduction

California's Proposition 65, officially known as the Safe Drinking Water and Toxic Enforcement Act of 1986, is a statute that waplaced on the ballot by citizen petition due to concern over inadequate governmental public health regulations. The purpose of the law is to enhance community right-to-know, protect drinking water supplies, and reduce toxic releases. Although the law was opposed by industry and agriculture groups, as well as almost every major newspaper in California, Proposition 65 was approved by the California electorate by nearly a two to one margin.

Proposition 65 mandates that the Governor of California publish a list of chemicals that are known to cause cancer, or been developmental or reproductive toxicity. In addition, warnings must be provided by businesses that knowingly and intentionally expose individuals to these chemicals, unless it is determined that the exposure poses no significant risk assuming a exposure at the level in question for cancer causing chemicals. For chemicals causing reproductive toxicity, businesses that knowingly and intentionally expose individuals to these chemicals must provide warnings, unless it is determined that the exposure will have no observable effects assuming an exposure level 1,000 times the level in question. The warning requirements become effective twelve months after the date of listing of the chemical. Businesses are required to provide a "clear and reasonable" warning, which can take the following forms: labeling a consumer product, posting signs at the workplace/businessplace, or publishing notices in the newspaper. In addition, discharge of these chemicals into drinking water supplies are prohibited twenty months after the date of listing of the chemical, except in those cases where the discharger can demonstrate that the discharge is insignificant. The governor's list currently includes over 580 chemicals, 420 carcinogens, and 160 reproductive toxins. The Act is not applicable to government agencies, drinking water utilities, and businesses employing fewer than ten persons.

Recent Developments

Following the implementation of the Act, many industries have attempted to avoid or reduce the requirements. The food, drug, and cosmetic industries lobbied to receive a temporary exemption from the law on the grounds that they are already regulated by the US Food and Drug Administration (FDA). In addition, some industry groups tried to avoid having to develop warning labels by setting up a toll-free telephone number for product information which was ruled unacceptable by the courts. By contrast, other industries (such as the tobacco industry) have implemented Proposition 65 warning labels. These labels have added significantly to the scope of hazard warnings on consumer products in California.

Proposition 65 has had some measure of success in influencing the decisions of manufacturers, wholesalers, and retailers, and reducing the risks of chemical exposure. While data are not

currently available on actions taken by the regulated community to remove themselves from the purview of Proposition 65, there is evidence that manufacturers have reformulated products to eliminate or reduce exposures to listed chemicals to avoid having to provide warnings. Proposition 65's effectiveness as a market-based incentive for the reformulation of products has led to the removal of certain solvents from correction fluids, as well as the removal of lead from certain ceramic products and from foil wraps on wine bottles. In addition, Proposition 65 has been cited as the reason for process modifications, chemical substitutions, and the use of pollution control devices to eliminate or reduce emissions of listed chemicals that would have required warnings.

Program Summary

California EPA's OEHHA is designated as the lead agency for Proposition 65 implementation. OEHHA is "directed to implement the Act in a manner that is fair, predictable, and based on a firm foundation of science." OEHHA compiles the list of carcinogens and reproductive toxins, prepares dose-response assessments on listed chemicals, promulgates regulations, and provides assistance to the regulated community in complying with the law. In addition, the Science Advisory Board (SAB), established by the Governor, reviews chemicals and recommends those to be added to the list. The state's SAB consists of two independent committees of scientists and health professionals that serve as the state's qualified experts; the Carcinogen Identification Committee and the Developmental and Reproductive Toxicant Identification Committee. The authority to enforce Proposition 65 is vested in the Attorney General, local district attorneys, and certain city attorneys. Private citizens may also take action to enforce Proposition 65, following certain conditions (see "Enforcement") (Health and Safety Code, Section 25249.7).

Proposition 65 uses an unusual means of enforcement that allows private citizens to initiate proceedings against alleged violators and reap monetary benefits from successful actions. Sixty days after notifying public authorities (i.e., the Attorney General, the appropriate district attorney, or city attorney) of an alleged violation, any individual or group may sue the offending business if the authorities are not "diligently prosecuting" the matter. If successful, the individual or group bringing suit receives 25 percent of the penalty fines, which may amount to a maximum of $2,500/day for each violation. The plaintiff filing suit must first show that the alleged violator generated a knowing discharge or exposure. It is then the responsibility of the defendant to prove that the exposures and discharges were within legal limits.

Examples of warnings that have been issued as a result of Proposition 65 include: labels on cigars, pipe tobacco, and other tobacco products not covered by the federal cigarette labeling requirements; point-of-purchase signs warning about risks of alcoholic beverage consumptions during pregnancy; signs warning about the presence of environmental tobacco smoke; and newspaper notices about routine or incidental emissions from facilities in the community.

Program Methodology

OEHHA compiles and publishes the list of chemicals known to the state to cause cancer or developmental/reproductive toxicity, and updates it at least annually. A chemical is listed:

1) if, in the opinion of the "state's qualified experts," the chemical has been clearly shown to cause cancer or reproductive toxicity;
2) if an "authoritative" body designated by the "state's qualified experts" has formally identified the chemical as a carcinogen or a developmental/reproductive toxicant; or
3) if any state and/or federal agency has formally required the chemical to be labeled or identified as a carcinogen or a developmental/reproductive toxicant.

The "state's qualified experts" have designated the following organizations as authoritative bodies: the US EPA, the FDA, the International Agency for Research on Cancer, the National Institute for Occupational Safety and Health (NIOSH), and the National Toxicology Program.

Additionally, there are two business requirements as part of the rule. First, twelve months after a chemical is listed, businesses must not knowingly and intentionally expose any individual to a listed chemical without first providing a "clear and reasonable warning," unless the business can demonstrate that the exposure:

- does not exceed 1/1000 of the "no observable effect level" (NOEL) for reproductive toxins;
- poses "no significant risk" of cancer. “No significant risk” is defined as the level that results in a cancer risk of less than one excess case of cancer per 100,000 individuals exposed over a 70-year lifetime for carcinogens. In other words, if you are exposed to the chemical in question at this level every day for 70 years, your chances of getting cancer will be no more than 1 case in 100,000 individuals so exposed.

The second business requirement stipulates that twenty months after the chemical is listed, businesses must not knowingly discharge the chemical into the drinking water supply unless the discharger can demonstrate that a “significant amount” of the listed chemical has not, did not, or will not enter any drinking water source and that the discharger complies with all other applicable laws, regulations, permits, requirements or orders. "Significant amount" refers to any detectable amount, unless the resulting exposure meets the same criteria for exemptions from the warning requirement.

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SCIENTIFIC CERTIFICATION SYSTEMS' ENVIRONMENTAL CLAIMS CERTIFICATION PROGRAM

Introduction

Scientific Certification Systems's (SCS) Environmental Claims Certification Program was developed in 1990 to independently verify the "accuracy of environmental claims on products." Under this program, SCS conducts detailed investigations to determine whether a claim can be verified. When the program was developed, environmental claims were largely unregulated and it was difficult for consumers and retailers to know what claims to believe. SCS certifies claims in the following areas:

- Recycled Fiber
- Biodegradable Product
- Certified Organic Ingredients
- No Smog Producing Ingredients (VOCs)
- Water Efficiency

Once a product has been certified by SCS, its packaging may display an "authorized certification emblem" accompanied by an exact description of the verified claim. SCS emphasizes consumer education by providing product shelf signs, information printed on the products, and special educational material prepared by manufacturers and retailers. SCS will certify claims for consumer products and packaging, as well as for materials used by product manufacturers. To date, more than 150 manufacturers and retailers are participating in the SCS Environmental Claims Certification Program, and SCS has evaluated claims for more than 2,000 consumer and business products. Participants range from small entrepreneurs to Fortune 500 companies. The vast majority of companies are based in the US

Recent Developments

SCS recently integrated its Environmental Claims Certification Program and its LCA and Certified Eco-Profile programs. This allows SCS to help companies choose from several environmental claims to find the best certification for a particular product. A company may choose a full life-cycle assessment, but also may choose to have a specific claim certified.

Program Summary

Five steps are taken during claims certification. In Step 1, SCS does an initial feasibility assessment of the manufacturer's product to determine the appropriate certification in one of the five certification categories. The manufacturer and SCS sign a contract in Step 2. In Step 3, SCS engineers or scientists verify the manufacturer's claim by evaluating information released by the manufacturer, reviewing results from independent testing facilities, and performing on-site

inspections to verify the information. In Step 4, if a product's claims are substantiated, SCS issues a certificate and authorizes the use of the SCS Certification Emblem to the manufacturer. Ongoing monitoring takes place in Step 5, during which quarterly reviews are conducted to maintain the accuracy of data. Fees for certification vary greatly, ranging from $1,500-8,000. Among other factors, fees depend on the number of sites that have to be visited, the complexity of the production process, and the ease of obtaining information from the company being studied. SCS charges companies for quarterly certification updates, but does not charge an annual fee or royalty.

In addition to verification, SCS administers special claims screening programs for retailers and other purchasing agents. These programs help purchasing agents to ensure that product environmental claims that manufacturers may be using are credible and comply with all state and federal green marketing guidelines.

Program Methodology

The categories for claim certification were chosen based on the types of environmental claims that prevailed in the market. Criteria were developed with information gathered from stakeholders, outside literature, independent studies, and SCS's scientific advisory board. The criteria were reviewed by industry and stakeholders. Criteria are readily available on Fact Sheets provided by SCS.

Other Information

In 1991, SCS announced joint efforts to establish an Environmental Claims Evaluation Program for The Home Depot, a nationwide retailer. Under this program, SCS is working with The Home Depot to verify the accuracy and significance of claims made for products that it stocks. In addition to the Environmental Claims Evaluation Program, many of The Home Depot stores carry products that have undergone actual certification.

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Product Categories

Final Categories

Recycled Fiber
Biodegradable Product
Certified Organic Inputs
No Smog Producing Ingredients (VOCs)
Water Efficiency

Categories Under Development

Alternatives to Poison
Poison-free

SCIENTIFIC CERTIFICATION SYSTEMS' CERTIFIED ECO-PROFILE LABELING SYSTEM

Introduction

Scientific Certification Systems's (SCS) Certified Eco-Profile Labeling System is a third-party, neutral declaration of environmental performance of a product. It is designed to help "managers, design engineers, purchasing agents, retail and industrial customers, and policy makers understand the environmental performance of products and materials to make better informed decisions" by conveying the findings of life-cycle assessment (LCA) studies. As part of the Eco-Profile, SCS performs a cradle-to-grave assessment that covers all relevant impacts for each of a product's life-cycle stages: raw material extraction, material processing, manufacturing, distribution, use, and disposal. The results of the assessment are presented quantitatively on the "Certified Eco-Profile," which communicates an overall declaration of the environmental performance of a product or industrial system. The Certified Eco-Profile has both internal and external applications. When used as a product label, the eco-profile has often been referred to as the environmental equivalent of a nutritional label. Based on the life-cycle assessment, special claims of achievement may also be certified. These claims include "Certified Environmental State-of-the-Art," "Certified Environmental Improvements," and "Certified Environmental Advantages." At the present time, the results from the Eco-Profile and an accompanying report are used primarily at the industrial level to communicate environmental performance data and to provide a tool that can be used to improve manufacturers' processes from an environmental standpoint. SCS is currently engaged in several assessment projects at both the domestic and international levels. SCS expects that in early 1998, many new products will carry the Eco-Profile on their labels. Several products that are currently in the marketplace carry an older version of the Eco-Profile (see "Recent Developments").

Recent Developments

The Certified Eco-Profile Labeling System evolved from SCS's Environmental Report Card, which was introduced in 1993. The Report Card provided a quantified summary of the resources used and emissions associated with a product system. The Certified Eco-Profile, in contrast, is based on a more advanced form of LCA that goes a step further to link the quantified resources and emissions of a product back to the specific environments where releases occur. Both the Report Card and the Certified Eco-Profile have consumer and industrial applications (e.g., internal company communications and industry-to-industry communications), but currently, demand for the Certified Eco-Profile is primarily at the industrial level. The name was changed because "Eco-Profile" is more consistent with the methodology. SCS believes that the name "Eco-Profile" is easier than "Report Card" to translate, and is more compatible with international terminology.

Program Summary

Through the Certified Eco-Profile Labeling System, SCS assesses an industrial product material. SCS is engaged in projects in several industries, chosen on the basis of industry interest and demand. The products and services currently being assessed include: building materials, energy production systems, textiles and apparel, forest products, steel products, glass, household appliances, telecommunications equipment, paints, and plastics.

The assessment process consists of several phases. SCS meets with the client to set the parameters of the study, then conducts primary and secondary research, including collecting information and data from the manufacturing process, vendors, and suppliers. SCS processes the data, identifying and quantifying the system resources used and emissions which impact the environment. SCS then develops a quantitative profile of these impacts.

The results are presented in a detailed report for the client that is accompanied by a "Certified Eco-Profile Executive Summary and Data Sheet" (ES/DS), and a "Certified Eco-Profile." The report and ES/DS detail these findings for each unit process in the life-cycle. This includes a detailed description of the study boundaries, an explanation of the production process, a summary of key findings as illustrated on the Certified Eco-Profile, details of these findings for each unit process in the product life cycle, an explanation of any significant environmental achievements, and an illustration on how the production system studied compares to similar systems. The results presented on the Certified Eco-Profile summarize the net resources depleted and the effective emission loadings on the environment under a set of 15-20 core "environmental impact indicators" that reflect the unique system being studied. The Certified Eco-Profile also indicates when there are no measured indicator values above internationally recognized thresholds. The Certified Eco-Profile could be affixed to a retail product or used internally by a company as an environmental management tool. One of three claims of environmental achievement based on the assessment may be certified:

Environmental State-of-the-Art: Earned by a product performing in the top 20th percentile in its product category for all significant environmental indicators.

Environmental Improvements: Earned by products with demonstrated environmental performance improvements over time.

Environmental Advantages: Indicates key advantages (and trade-offs) when comparing the product evaluated to another product or material that can perform the same function.

As in all LCA studies, resource consumption and emissions data are collected for each "life-cycle" stage studied. SCS employs a methodology known as life-cycle stressor-effects assessment (LCSEA), which goes beyond traditional LCA practice by integrating environmental data in order to characterize the actual environmental significance of the inventory data. This process was

selected because SCS felt that it provides a more scientifically accurate and objective measure of environmental performance. The ES/DS, mentioned above, presents the streamlined life-cycle stressor-effects assessment inventory data as well as the final LCSEA impact indicator values. It shows the relative contribution of specific unit operations to the cumulative environmental indicator values, and shows the relationship between the original inventory values and the final indicator values. Of SCS's current projects, a portion use LCSEA, but all future projects intended for a consumer audience will use LCSEA.

SCS describes five features of the Certified Eco-Profile Labeling System as follows:

1. The system is a comprehensive and science-based system. Findings from the life-cycle are presented in an understandable and usable label format, both in numeric and graphic form. The findings are listed under global, regional and local environmental indicators that are relevant to the system studied.
2. The system provides a level playing field for comparative assessment. The LCA methodology provides a uniform foundation for product assessment, and helps to ensure that fair comparisons can be made among products.
3. The system records the unique environmental "footprint" of each product. The eco-profiles of similar products may differ greatly, depending on the source of its natural resources, the manner in which such resources are extracted, differences in production technologies used, emissions released, and the relative tolerance of the environment into which these emissions are released.
4. The system documents current practices and environmental achievements, and gives companies information that allows them to determine where improvements are most needed.
5. The system is applicable to all markets and avoids trade barriers because it is a site-specific declaration of actual environmental performance, and does not have restrictive criteria and standards that could reflect local and national priorities. It is directly translatable in all countries and markets.

The typical LCSEA study, including the production of a full life-cycle report, the Executive Summary and Data Sheet, and the Certified Eco-Profile, costs between $15,000-$50,000. There are no licensing or annual fees, and maintenance fees are minor.

Program Methodology

SCS performs a life-cycle stressor-effects assessment (LCSEA), which is a form of LCA developed for use in the evaluation of product's environmental performance evaluation and labeling. It is a cradle-to-grave assessment that covers all relevant impacts for each of a product's life-cycle stages: raw material extraction, material processing, manufacturing, distribution, use, and disposal. The LCSEA methodology has a number of key features. First, it maintains simplified data treatment: inventory data are not aggregated in order to maintain data characteristics of time and space.

Second, it incorporates environmental data from the "providing" environments (i.e., the source of material inputs) and the "receiving" environments; third, recognized threshold levels are used to determine whether an emission is causing a measurable effect; and finally, it models the environmental mechanism through defined stressor-effects (i.e., cause and effect) networks that link specific system inputs, outputs or activities (i.e., the "stressors") to model actual impacts on the environment. The system presents results from the assessment in two broad categories of environmental indicators:

1. Net Resources Depleted includes the following indicators: water, wood fiber, fossil fuels, non-fuel oil and gas, minerals, metals, direct land area, and marine resources.
2. Emission Loadings includes the following indicators: greenhouse gases, acidying chemicals, ground level ozone, stratospheric ozone-depleting substances, hazardous air pollutants, noise, eutrophication chemicals, total oxidizable organic carbon, total suspended solids, hazardous water pollutants, and hazardous waste.

Eco-Profile studies are conducted when individual companies and industry groups come forward with interest and demand. Information for each study is collected from sources including primary data from participating companies and suppliers, published and unpublished data from LCA studies, environmental impact assessment and risk assessment studies, government statistics, and industry sources. Each project is peer reviewed and opportunities for input and review by key stakeholders are provided. SCS conducts site-specific impact assessments, recognizing local, national, and global conditions. The methodology for the Certified Eco-Profile goes beyond the conventional Life-Cycle Inventory methodology (e.g., such as that put forth by the Society for Environmental Toxicology and Chemistry (SETAC)) to include data pertaining to actual environmental effects. Examples of environmental characterization data collected include: local/regional exposure data; background concentration levels; exceedance of threshold levels by GIS mapping for acidification and ground level ozone formation; composition and structure of floral and fauna types; the size of the reserve base for a given resource; and recycling rates for a given material and the number of times the material is recycled.

Other Information

SCS is involved with the development of ISO 14000 standards for Type III labeling, the category of labeling that includes the Certified Eco-Profile. SCS is also working to harmonize with emerging Type III labeling initiatives being conducted outside of the US, believing in the importance of harmonizing with programs before they are developed. SCS has formed alliances with institutions in Chile, Finland, Sweden, Japan, and Korea to offer LCA and Certified Eco-Profile services worldwide. SCS is also collaborating with two Nordic organizations, the Swedish Environmental Research Institute (IVL) and Soil and Water (the environmental division of Jaakko Pöyry, Finland), to write an LCSEA practitioners' manual for Type III labeling. The first version (1.2) was released in April 1997, and international stakeholder input is being assembled. The new version will be released in 1998.

The Environmental Work Place Analysis is another LCA based program run by SCS. The program assists companies to incorporate environmental considerations into the overall management strategies. It was designed to educate employees at all levels about the environmental consequences of their actions, and to help employees make good environmental decisions at work. At the same time, it has been used as a tool to document environmental savings and their corresponding cost savings for corporations. Employees complete a questionnaire about job-related activities, and SCS calculates the amount of raw materials and energy used and the amount of pollution and waste generated as a result of these activities. The information is summarized for each employee on "Employee Eco-Profiles," along with departmental or faculty eco-profiles.

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Product Categories

All product categories

SCIENTIFIC CERTIFICATION SYSTEMS' FOREST CONSERVATION PROGRAM

Introduction

The Forest Conservation Program (FCP) was developed by Scientific Certification Systems (SCS) in 1991 to "help the forest products industry, government policy makers, and the general public bring order to the contentious public debate over management, harvesting, and the conservation of the earth's forests." The goal of the Forest Conservation Program is to identify forest management practices that most successfully sustain timber resources while maintaining the ecological viability of the forest and benefiting the surrounding community.

SCS sends independent inspection teams to evaluate company or state forest operations. Each evaluation team consists of experts representing such disciplines as forestry, wildlife biology, hydrology, sociology, natural resource economics, and sustainable resource management. The evaluation team produces a detailed report with valuable feedback and recommendations for individual operators who are interested in maximizing the longevity of their timber resources. High-scoring forests (80 or above on a 100-point index) are certified as "Well-Managed." In this way, SCS can provide an "independently verified basis for potential marketplace claims." The program can be applied in tropical, temperate, and boreal forests and plantations, and is open to small and large land holders alike. SCS certification is also available through Chain-of-Custody Certification to manufacturers who produce goods from certified well-managed timber, and to retailers and distributors who merchandise these products. The FCP was accredited by the Forest Stewardship Council in 1995.

As of September 1997, SCS had certified 15 forestry operations and 35 Chain-of-Custody operations. Four additional forestry operations are pending certification. Applicants to the certification programs vary greatly, and include forest managers that produce logs and lumber, distributors, manufacturers, wholesalers, and retailers. SCS has certified forests and chain-of-custody operations in North and South America, as well as in Sweden.

Recent Developments

SCS recently initiated a program to evaluate and certify public forestland management units. A pilot project in Pennsylvania was initiated in early 1997 to evaluate about half of the state's forestland. Due to the success of this program, Pennsylvania has given SCS the authority to evaluate the remaining state forestland. SCS considers state land evaluations to be an emerging field.

SCS has also recently initiated the Consulting Forester and Small Woodlot Certification Program (Small Woodlot Program) to recognize sustainable forest management on small woodlots. The operational steps for evaluation are very similar to those of the FCP; however, the program is

designed to reflect the scope and scale of small, nonindustrial woodlots, usually no larger than 2,000 acres. In this new program, the management practices of a forestry consultant are evaluated on a sample of woodlots that are under the forester's care. Each woodlot being considered for certification must meet the Forest Stewardship Council's Principals and Criteria.

Program Summary

In the in-depth analysis of specific forestland area (management units), SCS establishes an Evaluation Team composed of consultants with expertise in disciplines such as forestry, biology-ecology, economics, wildlife, sustainable resource management, and decision sciences. The summary of the Forest Conservation Program and Chain-of-Custody Certification are explained separately below.

Forest Conservation Program

The process of forest evaluation and certification involves five main steps. In Step 1, SCS and the client plan the evaluation of the forest operation management practices, including its scope and geographic limitations. The selection of an Evaluation Team takes place in Step 2. Although the final decision is made by SCS, the Team selection includes input from the client. Step 3 involves determining the scope of the evaluation, as well as data collection and analysis. According to an FCP fact sheet, the Team "conducts on-site inspections, collects and reviews landowner-supplied records, reviews documents from government forestry agencies and other sources, and conducts interviews with people in the surrounding community."

The Team identifies relevant "importance-weighted" evaluation criteria in Step 4. These criteria are organized into three categories: timber resource sustainability, forest ecosystem maintenance, and financial and socio-economic considerations. Because of the diversity of each site, these criteria and their relative weights differ from operation to operation. Finally, in Step 5, the Team assesses the extent to which the site "meets the underlying objectives and goals associated with each evaluation criterion," and prepares a written report detailing the findings. This report is given to the client for review and feedback to ensure that the client does not disagree with the accuracy of the data, or the veracity of any observations and assumptions. The report is then submitted to peer reviewers for comments on the general FCP methodology and the results of the specific evaluation. Performance is measured on a 0-100 point scale in each of the three main program elements, and SCS provides scoring guidelines that describe a threshold and optimal performance. Forests that rate above 80 in all three categories are designated as "Well-Managed Forests" by SCS. In addition to scoring sites in the three categories, the evaluation can also make non-mandatory suggestions to the applicant to improve the quality of management.

Certification is usually valid for three to six years, at which point a full re-evaluation occurs. The period before re-evaluation depends on the length in years of the applicant's management plan. SCS requires annual on-site audits to monitor the applicant's compliance with stated goals, as well

as to establish an ongoing framework that allows SCS to track issues or concerns raised in the initial evaluation.

The cost of forest certification varies greatly from site to site, and depends on the size of the operation, the geographic location and distribution of the forest areas, and the ease of access. The initial fee is between $.05-.40 per acre, and annual audits cost between $2,000-5,000.

Chain-of-custody Certification

Valid chain-of-custody procedures are an essential component to a forest certification program. Chain-of-custody procedures are intended to ensure that products bearing FCP labeling are produced from certified sources and materials. Procedures vary greatly from one production system to another, but SCS has developed basic requirements for the different possible scenarios. Procedures can include assuring that logs bear a tag identifying the forest of origin, segregating certified lumber from other lumber at a secondary mill, and segregating the lumber during transport. The procedures are implemented at key points where the product is transferred, such as when it leaves the forest, arrives at a paper mill, or is delivered to the broker, wholesale dealer, or retailer. The chain-of-custody program certifies that production systems have these procedures in place.

Applicants submit a summary of their processing/sales operations outlining how their operational procedures will incorporate chain-of-custody considerations. SCS reviews the summary to determine whether or not to proceed with an on-site compliance audit. The purpose of the audit is to ensure that the applicant's staff follow the documented procedures, determine if the documentation of activities is sufficient, and review the effectiveness of the system in meeting chain-of-custody requirements. The audit is compiled into a report reviewed by the applicant to ensure that the client does not disagree with the accuracy of the data. If the operations successfully meet chain-of-custody requirements, SCS issues the applicant a certificate. SCS requires annual on-site audits of the manufacturing and distribution process, and can conduct random, short-notice inspections and request documentation related to the product's chain-of-custody.

The fee for a chain-of-custody certification is between $200-2,000 annually, depending on the size and complexity of the operation.

Program Methodology

The framework and criteria for the FCP and Chain-of-custody Certification were developed through a process of consultation with professionals and experts in the forestry field, and information collected from the literature and independent studies. The FCP's framework was peer-reviewed in the development stages. Because the field of forestry management changes with

technical developments, the criteria and methodology are also peer-reviewed during each evaluation. The criteria are published in the Program Description and Operations Manual.

Other Information

Because small and mid-sized timberland owners are becoming more common, the FCP has developed an evaluation process that accommodates the realities of small owners. In particular, the costs of the evaluation are reduced. The new Small Woodlot Program will also help small businesses.

SCS is following the negotiations and debate over ISO forestry standards, but is not actively participating in their development. Since ISO forestry standards are being developed to provide a certification framework, and the Forestry Stewardship Council (FSC) provides performance measurements, SCS foresees that ISO and the FSC could eventually work well together.

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Product Categories

Wood products

SCIENTIFIC CERTIFICATION SYSTEMS' "NUTRICLEAN FOOD SAFETY MANAGEMENT PROGRAM"

Introduction

The NutriClean Food Safety Management Program was launched by Scientific Certification Systems (SCS) in 1984. NutriClean is the agricultural division of SCS. The program is based on the "No Detected Residues"(NDR) certification for fresh produce. The NutriClean-Certified NDR standard means that produce contains no pesticide residues above a laboratory detection limit of 0.05 parts per million. The program was launched not only to test pesticide residues in fresh produce, but also to recognize growers whose crops meet these standards. NutriClean standards are up to 1,000 times more stringent than those of the US Environmental Protection Agency (EPA). The program has several components, one of which is Grower Certification. Produce from fields that are NutriClean-certified carries a certification label on pallets and containers and may be accompanied by a shelf label in retail stores. In addition to grower certification, SCS performs testing services for growers, retailers, and importers. Foods grown organically that have no detected residues qualify for NutriClean's Organic Certification.

NutriClean is based on three key principles: 1) the certification is granted by an independent, neutral, third-party with no vested interest in the product being certified; 2) all claims must be scientifically verifiable; and 3) the certification process is complete with appropriate "checks and balances" to ensure accuracy in the final result.

The NutriClean program has certified over 400 growers domestically and internationally. It works with 15 major grocery store chains with more than 3,000 individual stores, and provides services to more than 150 importers.

Recent Developments

NutriClean recently introduced a program to provide a variety of food safety management services based on the principal known as HACCP (Hazard Analysis Critical Control Point). HACCP procedures cover proper food handling, preparation, and storage techniques, and are designed to control physical, chemical, and microbiological hazards. The Food and Drug Administration (FDA) and the Department of Agriculture have established HACCP requirements for seafood, meat, and poultry. Produce standards are voluntary at this time. SCS assists grocery retailers, food processors, suppliers, and growers in meeting these requirements. SCS offers food safety and sanitation programs, employee education, and certification of well-planned and properly implemented HACCP-based food safety management programs.

Program Summary

SCS's NutriClean program has several components. Grower Certification involves testing produce and certifying that it meets "clean" food standards; in other words, that the produce has "No Detected Residues" (NDR). NutriClean certification requires that growers fully disclose the pesticides that they use. SCS staff conduct on-site inspections and take field samples from the produce, which are extensively analyzed by independent laboratories. SCS frequently splits samples among different testing laboratories as a quality control measure. Tests are conducted for each pesticide used by the grower, regardless of whether it is natural or synthetically derived. When a field is certified as having NDR, its produce is licensed to carry a NutriClean label. In addition, certified products are published in NutriClean's weekly *Certified Product Status Bulletin*, which is available on a subscription basis to wholesale distributors, retailers, and food providers. Fees for grower certification vary greatly and depend on the number of fields and number of pesticides, among other variables.

Additional services for growers are intended to encourage the responsible reduction in pesticide use and can assist growers in meeting NutriClean NDR standards. These services include: employing microbiological assays to assist growers in developing microbiological quality assurance programs, nutritional analyses to help growers maximize the nutritional value of crops, analyzing the rate that pesticides decay on crops to help farmers fine-tune their pesticide applications, documenting that crops comply with government regulations, and conducting soil and water analyses to provide information about potential contamination.

NutriClean offers a variety of services to retailers. One of these services is testing non-NutriClean-Certified produce items for pesticide levels and pathogens to verify compliance with FDA regulations. This testing service may be part of retailers' own quality assurance program. This program is known as the "DOCK" program because NutriClean collects samples at the loading docks of retail distribution centers. Collection is done either weekly or bi-weekly. The number of samples collected is based on the volume of produce that the retailer purchases. NutriClean attempts to sample five percent of the incoming product. NutriClean also conducts laboratory analyses of food microbiology, chemistry, additives, alteration, and nutrition, and can conduct chain-of-custody sampling and verification. In general, these services help retailers improve food quality and safety. Fees for DOCK testing vary depending on the quantity of produce sampled.

NutriClean also tests a variety of food items for importers. In addition to produce, NutriClean tests seafood, meat and poultry, processed foods, and spices for pesticide residues, harmful bacteria and parasites. The main purpose of this service is to aid importers in complying with FDA pesticide residue limits. Fees for importers are competitive with those of other organizations doing similar work.

Program Methodology

The "No Detected Residues"(NDR) certification is the same for all types of fresh produce. To be certified, produce must have no detectable pesticide residue above 0.05 parts per million. The level of 0.05 ppm is the standard limit of quantification that can be met by most labs. In developing the program, information was gathered from independent studies, participating producers, and current literature. The program has been peer reviewed. Operating costs are covered by the fees collected for services.

Other Information

Although NutriClean certifies growers both within and outside of the US, it has not been involved in any trade conflicts.

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Product Categories

Produce
Seafood
Meat
Poultry
Spices

PRODUCT LABELING UNDER THE TOXIC SUBSTANCES CONTROL ACT (TSCA)

Introduction

The Toxic Substances Control Act (TSCA) was enacted by Congress in the fall of 1976 to identify and control toxic chemical hazards to human health and the environment. "To prevent unreasonable risks," the Act gives EPA the authority to "select from a broad range of control actions under TSCA, from requiring hazard-warning labels to outright bans on the manufacture or use of especially hazardous chemicals." (EPA, 1987)

Program Summary

EPA is authorized to require labeling both for existing chemicals appearing on the TSCA Inventory and for new chemicals. For existing chemicals,

Section 6(a)3 of TSCA allows the Administrator to apply:

> *a requirement that such substance or mixture or any article containing such substance or mixture be marked with or accompanied by clear and adequate warnings and instructions with respect to its use, distribution in commerce, or disposal or with respect to any combination of such activities. The form and content of such warnings and instructions shall be prescribed by the Administrator.* (PL 94-469)

The law does not specify the form or content of the warnings, and EPA has not promulgated any regulations establishing a single consistent method of labeling. To date, labels have been required or proposed for chemicals and products on a case-by-case basis. To date, regulated chemicals and products subject to TSCA Section 6 labeling include PCBs, asbestos, hexavalent chromium and acrylamide grout.

Under TSCA Section 5(e), EPA requires labeling for some new chemicals that "may present an unreasonable risk of injury to health or the environment" using its authority "to prohibit or limit the manufacture, processing, distribution in commerce, use or disposal" of such substances.

Generic labeling provisions listed in 40 CFR §721.72(b), (g), and (h) are applied to significant new uses of specific chemicals on a case-by-case basis. Companies may be required to provide labeling for containers distributed in commerce, for containers used in the workplace by employees, or both. When labeling is required for containers distributed in commerce, labels must include:

a) The commonly recognized identity of the substance
b) A statement of health hazard(s) and precautionary measure(s), if any
c) A statement of environmental hazard(s) and precautionary measure(s), if any
d) A statement of exposure and precautionary measure(s), if any, and

e) The name and address of a source of additional information about hazard evaluation and emergency procedures.

Additionally, labels for containers distributed in commerce must not conflict with the requirements of the Hazardous Materials Transportation Act and the regulations issued under it. Labeling requirements imposed under TSCA Section 5 seldom affect consumers because the regulated substances are mainly distributed between manufacturers and processors and are only rarely used in consumer products.

40 CFR §721.72 contains slightly different labeling requirements for workplace uses of new chemicals. Companies may provide signs or other written material in lieu of container labels in the workplace. There is no requirement to include the name and address of a contact for further information for workplace labels. Portable containers used to transfer a new chemical from a labeled container for an employee's immediate use need not be labeled. Existing labels on incoming containers must not be removed or defaced unless they are immediately relabeled with the required information.

In addition to the specific labeling requirements applied under TSCA Section 5(e), TSCA Section 5(f) allows EPA to apply Section 6's labeling provisions to new chemicals as well as existing ones.

Examples of TSCA Labels

Polychlorinated biphenyls (PCBs) were regulated under TSCA in 1978. The labeling section of this rule required one of two labels to be used, a "Large PCB Mark" or a "Small PCB Mark." The large label states:

"*Caution: Contains PCBs, a toxic environmental contaminant requiring special handling and disposal in accordance with US EPA regulations 40 CFR 761. For disposal information contact the nearest EPA office. In case of accident or spill, call toll free the US Coast Guard National Response Center."* The small label states, "*Caution: Contains PCBs. For proper disposal contact US EPA."*

The labeling of asbestos was required in 1989 as part of regulatory actions that included a ban on "almost all products" containing asbestos. Consumer products containing asbestos include clutch parts and brake shoes for cars and trucks, pipeline wrap and vinyl asbestos floor tile. The labeling aspect of the rule is intended "to facilitate compliance with and enforcement of the rule." The required label stated:

"*Notice: This product contains asbestos. The EPA has banned the distribution in US commerce of this product under section 6 of TSCA (15 USC. 2605) as of [date, ranging from August 1990 to August 1995]. Distribution of this product in commerce after this date and intentionally removing or tampering with this label are violations of Federal law."* (54 FR 29460)

Hexavalent chromium-based water treatment chemicals used in HVAC and refrigeration systems were regulated under TSCA in 1990. (55 FR 221) The warning label reads:

> "*Warning: This product contains hexavalent chromium. Inhalation of hexavalent chromium air emissions increases the risk of lung cancer. Federal law prohibits use of this substance in comfort cooling towers, which are towers that are open water recirculation devices and that are dedicated exclusively to, and are an integral part of, heating, ventilation and air conditioning or refrigeration systems."*

EPA has proposed a ban on acrylamide and N-methylolacrylamide (NMA) grouts, which are used to make repairs to leaking cement structures such as sewers and manholes, but also to dams and basins, and to stop water flow in mines, reservoirs and hazardous waste sites. The ban would prohibit all use of acrylamide grout and would allow NMA to be used only for sewer repair for three years, subsequently banning it. EPA proposed labeling of containers of such grout 15 days after the effective date of the rule. "EPA believes there is a strong need for labeling to ensure compliance with the prohibitions on the manufacture, importation, distribution and use of acrylamide and NMA grouts. Labeling is a necessary mechanism to direct users toward compliance with the prohibitions on uses of acrylamide and NMA grouts." (56 FR 49871) No wording for the label warning has been suggested.

40 CFR §721 subpart E defines significant new uses for many specific chemicals. Manufacturers, importers, or processors of these chemicals are required to notify EPA when they intend to engage in a significant new use of the listed substance. Failure to comply with labeling requirements specified in subpart E constitutes a significant new use. For 2-Chloro-N-methyl-N-substituted acetamide, the first chemical listed in 40 CFR §721 subpart E, companies are required to label only containers distributed in commerce. The following specific hazard and precautionary statements are required for 2-Chloro-N-methyl-N-substituted acetamide: "This substance may cause internal organ effects," "When using this substance avoid skin contact," and, "When using this substance use skin protection."

40 CFR §721 subpart E prescribes more extensive labeling provisions for halogenated phenyl alkane. For this substance, companies are subject to all of the §721.72 requirements for workplace labeling and for the labeling of containers distributed in commerce. In addition, labels must be legible, prominently displayed, and in English. The information they contain may also be repeated in other languages. Specific hazard and precautionary statements required for halogenated phenyl alkane include: "This substance may cause cancer," "When using this substance use respiratory protection," "When using this substance use skin protection," "This substance may be toxic to aquatic organisms," and, "Notice to users: do not release to water," Each of these statements must be followed by "See MSDS for details." 40 CFR §721 subpart E's requirements do not apply once halogenated phenyl alkane has been incorporated into a resin.

References

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US EPA, Office of Toxic Substances, 1991. "Proposed Ban on Acrylamide and N-Methylolacrylamide Grouts," *Federal Register*, 56 FR 49863, October 2.

VERMONT HOUSEHOLD HAZARDOUS PRODUCT SHELF LABELING PROGRAM

Introduction

The Vermont Household Hazardous Product Shelf Labeling Program was implemented in April 1991 by the Solid Waste Division of the State of Vermont, Agency of Natural Resources (the Agency). The mandatory shelf labeling program was established by a 1990 state law that required all retailers stocking household products containing hazardous constituents to identify those products via a shelf label. The program's purpose is to promote toxic use reduction and pollution prevention by educating consumers about the dangers of hazardous household products and encouraging them to consider alternatives. Additionally, through customer education, the program hopes to send a signal to manufacturers to produce less hazardous products by prompting consumers to avoid purchasing hazardous products. Approximately 3,500 Vermont stores (e.g., grocery stores, hardware stores, house and garden stores, and convenience stores) are subject to the law. Since 1995, however, some changes to the extent of labeling required by retailers have been made.

Retailers were initially concerned that the program would result in a negative consumer perception of their stores because they sell hazardous products. Instead, consumers have been quite supportive of the participating stores, and have expressed their appreciation for the additional product information. Retailers also worried about possible loss of sales of the labeled products. The state responded by modifying the program to label products deemed less toxic or nontoxic with an "exempt" label, so that retailers could offer officially-sanctioned alternatives to the labeled products. To qualify for an exempt label, a petition must be submitted to the Secretary of the Agency of Natural Resources, and it must be shown that the product is free of certain ingredients listed in the Vermont Community Right-to-Know list of hazardous chemicals.

Products covered by the program include those listed as household hazardous products in the Vermont state statute, and generally fall into the following four categories: cleaning products, auto and machine maintenance products, hobby and repair products, and outside use products (e.g., fertilizers, pesticides, butane or lighter fluid, etc.). Personal care products and food items are excluded.

Recent Developments

Since 1995, there have been changes made to the program aimed at streamlining its implementation. The biggest change to the program is that retailers are no longer required to label the shelf space below every hazardous product. Instead, the Agency provides retailers with 3"x 6", vinyl coated, yellow and black cards known as "shelf-talker" cards. Retailers are required to place this card in areas that display a significant quantity of hazardous products.

Additionally, as mentioned above, products considered less toxic or nontoxic were originally labeled as "exempt" from the program. Since 1995, however, it is no longer required that retailers label these products as such, though they are welcome to do so if they wish.

Program Summary

Vermont's program was established with input from the broad-based Governor's Technical Advisory Committee on Solid Waste and other interested parties. The Technical Advisory Committee included representatives from retailers as well as environmental organizations. The program was implemented and is maintained by the Solid Waste Division of the Agency of Natural Resources. The Commissioner of Agriculture has adopted the shelf labeling programs as its companion program for pesticides and commercial fertilizers.

Categories of products requiring shelf labeling are those listed in the Vermont state statute. Many of the products on this list also require labeling under the Federal Hazardous Substances Act. The Vermont program requires that the Agency provide information pamphlets and guides to retailers detailing which products meet the statutory determination of hazardous products under the labeling program. Additionally, the Agency is required to provide retailers information, brochures, and posters about the program for display on their premises and for their customers to use. However, since 1995, it is no longer mandatory that retailers label individual products (although the Agency reports that some retailers still do).

The program currently uses yellow and black shelf talker cards contain the signal words "Poison," "Danger," "Warning," "Caution," and "no warning label," in descending order. These signal words closely follow those on product labels required by the Federal Hazardous Substances Act and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). On the card, an arrow points from "Poison," indicating the most hazardous types of products, down to "no warning label," indicating that products with no warning labels on them are the least hazardous. A message to consumers that says, "Read label warning words...Choose less hazardous products" is also presented on the shelf talker card. The card prompts consumers to read these labels before purchasing hazardous products. Prior to 1995, every household hazardous product listed by the Vermont statute had to be labeled as such. Now, however, retailers are only required to place these shelf-talker cards on shelves (or other display areas) when over 20 percent of the shelf or display area contains hazardous products.

Retailers are provided with information about household hazardous products and alternatives, as well as logistical information on how to label shelves in information pamphlets and double-sided information cards. Also, during the first nine months of the program's implementation, a full-time "retailer educator" was hired to assist retailers in implementing the program.

In addition to the shelf talker cards, the Agency has developed informational posters to be displayed close to shelves where hazardous products are sold and brochures that contain

background information on products, potential hazards, safe disposal, and use of alternative nontoxic products.

Program Methodology

As a mandatory program, the Vermont Household Hazardous Products Shelf Labeling Program requires retailers to label the shelf space below hazardous product displays, when these products occupy more than 20 percent of the display area. Products covered by the program include those listed as household hazardous products in the Vermont state statute.

References

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Vermont Agency of Natural Resources, *Hazardous Product Shelf Labeling: What retailers need to know*, information pamphlet.

Vermont Agency of Natural Resources, 1996, *Report to the General Assembly on Streamlining Household Hazardous Product Shelf Labeling*.

Vermont Agency of Natural Resources, *Shelf-Talker Label*.

Vermont Agency of Natural Resources, 1995, *Household Hazardous Products...deserve your attention*, information brochure.

Product Categories

Auto Maintenance

- Motor oil
- Transmission fluid and additives
- Engine lubricants
- Antifreeze
- Windshield wiper solution
- Lead-acid batteries
- Engine cleaners and solvents
- Gas treatments
- Gas line freeze-up products
- Car waxes

Hobby and Repair Products

Paint (brush, spray, and aerosol)
Lacquers and thinners
Alcohol (not for human consumption)
Cresol, naphtha
Mineral spirts
Turpentine
Wood preservatives
Glues and adhesives
Photographic chemicals

Outside Use Products

Fertilizers
Pesticides
Pool chemicals
Self-lighting charcoal
Charcoal lighter fluid
Butane lighters

Cleaning Products

Furniture polishes and stains
Floor waxes
Car waxes
Spray dust cleaners
Drain cleaners
Toilet bowl cleaners
Oven cleaners
Spot and stain removers (petroleum based)
All aerosols
Shoe polish

WATER ALLIANCES FOR VOLUNTARY EFFICIENCY (WAVE)

Introduction

The Water Alliances for Voluntary Efficiency (WAVE) program was established by EPA's Office of Water in December 1992, following the success of other EPA voluntary programs such as Green Lights. WAVE's mission is to "encourage commercial businesses and institutions to reduce water consumption while increasing efficiency, profitability, and competitiveness." WAVE encourages water use efficiency by providing education on water conservation along with marketing support and use of the WAVE logo. The program currently targets the lodging industry, whose widespread public exposure provides an effective medium for educating the public on water conservation issues. WAVE expects to expand its focus by early 1998 to include office buildings, schools, and universities.

Program Summary

WAVE is funded and administered by EPA's Office of Water and provides its membership services free of charge. WAVE membership is divided into three categories: Partners, Supporters, and Endorsers. Any US commercial business interested in water conservation is eligible to become a WAVE Partner, although, as mentioned above, the program currently targets the lodging industry. Water service companies, equipment suppliers and manufacturers, government agencies, and utility companies are eligible to become WAVE Supporters. Finally, environmental groups and trade associations are eligible to become WAVE Endorsers.

WAVE Partners are primarily targeted to increase their water use efficiency. The WAVE Partnership consists of a Memorandum of Understanding (MOU) between EPA and the participating lodging establishment. The MOU commits the business to water efficiency practices in exchange for technical assistance, publicity, and use of the EPA and WAVE logo. There are currently 750 hotels, owned by 33 companies, participating in WAVE.

Specifically, the MOU requires that WAVE Partners appoint a WAVE Implementation Manager for their hotel or chain. They must survey their current water use devices and practices, and implement more efficient water use techniques. Partners, however, are not expected to undertake activities that will have an unreasonable impact on profitability. In addition, Partners agree to upgrade water devices to achieve 90 percent of projected water use reductions within five years of enrollment, and to use water-efficient devices in any new construction projects. To assist with these activities, WAVE provides member hotels with WAVE Saver, a software package that allows Partners to track water use, evaluate efficiency options, and choose the most economical alternatives for water use efficiency at their hotel. WAVE Saver allows hotels to enter their own property data (e.g., the number of rooms, size of the facility, etc.) to calculate the unit cost of water usage, then estimates annual water costs based on historical occupancy patterns. These data are used to highlight water-efficiency options and analyze the benefits of water-efficient equipment

upgrades. Program data and any progress toward water use efficiency must be reported to the EPA.

WAVE claims that instituting more efficient water use practices can reduce hotel water use by up to 30 percent. To accomplish such reductions, WAVE often examines plumbing fixtures, cooling systems, kitchens, laundries and landscaping. The WAVE Saver program allows hotels to customize water conservation measures to the unique nature of each property, location, and clientele. EPA also provides technical support through training, workshops, and a nationwide member help-line. By giving hotels the ability to identify for themselves the best water-efficiency options, WAVE encourages creativity and independent decision-making in water conservation.

In order to fulfill the educational component of the program's motivations, Partners must educate both customers and employees about the benefits of water use efficiency. A designated WAVE Partner liaison at EPA supplies WAVE outreach materials for this purpose. WAVE promotes Partners through public service magazine advertisements commending Partners' commitment to water conservation. WAVE gives Partners the right to use EPA and WAVE logos on stationary, advertisements, and displays. While the MOU sets limitations on the use of these logos, however, there is no formal mechanism for ensuring compliance with all of the conditions agreed to in the MOU,

Both hotel chains and individual franchises are eligible for WAVE Partnership, although, as mentioned above, the program plans to expand its focus in the near future. Because the WAVE Saver software is more suitable to larger hotels (more than 100 rooms), most of the current membership consists of larger hotel chains; however, some small, individual hotels have become WAVE Partners as well.

WAVE Supporters consist of resource-conscious organizations that can help commercial businesses become more efficient, such as water service companies, equipment suppliers or manufacturers, government agencies, and water and wastewater utilities. Supporters promote water efficiency especially within industry, help to publicize WAVE, recruit Partners, and work with EPA to improve the market infrastructure for water-efficient equipment. EPA works with Supporters by providing WAVE outreach and training materials and by establishing an information-sharing network for Supporters. WAVE Supporters also receive the WAVE Saver computer program to help them survey and upgrade their water use facilities, and may use the WAVE logo in promotional materials.

WAVE Endorsers are organizations like Green Seal and the American Hotel & Motel Association, that simply support the WAVE concept and pledge to help EPA promote water conservation practices. These organizations may also use the WAVE logo in promotional materials.

Program Methodology

The WAVE program bases the selection of its product categories on environmental impacts. Currently working with the hospitality industry, WAVE targets commercial businesses and institutions whose widespread public exposure provides an effective medium for educating the public on water conservation issues. WAVE membership is open to all interested hotels and includes automatic program certification. Members must abide by the terms of the MOU signed by WAVE and the member institution, which requires that members consider their recycling, reuse, maintenance, and product use patterns. WAVE reviews information from other environmental programs and member businesses, as well as relevant literature, in targeting business sectors and setting the standards for its MOUs.

References

Auer, Joy. "Cutting Back on Profit Leaks." *Lodging* May 1995.

EPA Office of Water. *Introducing WAVE- Water Alliances for Voluntary Efficiency*. September 1994.

Flowers, John. WAVE Program Director, US EPA. Personal communication with Abt Associates, Summer 1997.

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Product Categories

Lodging establishments
Water-service companies
Water or wastewater utilities
Energy utilities
Equipment manufacturers or suppliers
Consulting firms
State governments
Municipalities
Hotel franchisers
Environmental groups
Trade associations

BUYING GUIDES

Greening the Government: A Guide to Implementing Executive Order 12873

Greening the Government was issued in the summer of 1997 to "familiarize Federal agencies with Executive Order 12873 and help them understand its intent." It includes guidance on the prevention of waste, recycling of materials and acquisition of goods manufactured from collected materials. Although the guide is not a buying guide per se, it does provide basic information for government procurement of recycled products.

The guide contains a summary of the Executive Order including: standards, specifications, and designation of items; agency goals and reporting requirements; applicability and other requirements; and awareness. The guide also describes the regulations or recommendations for green standards in procurement. For example, it outlines the recommended recovered material content for many items to be used in green procurement such as paper, carpet, etc. The guide provides case studies of the actions that have been taken by various agencies to promote the purchase of recycled content. Finally, the guide provides a listing of resources with product information, including several buying guides listing environmentally preferable products.

References

Office of the Federal Environmental Executive. *Greening the Government: A Guide to Implementing Executive Order 12873*. Summer 1997.

The Green Pages

The Green Pages is a directory of 2,500 US suppliers of environmental products and services. Since 1993, it has ben published annually by the US Department of Commerce. In addition to being distributed to foreign countries, it is supported by the United States-Asia Environmental Partnership (US-AEP). US-AEP facilitates relationships between Asia and the environmental resources of the US, using *The Green Pages* as one of its primary tools.

All US companies are listed free of charge in *The Green Pages* if they are registered in the US Department of Commerce Office of Export Trading Company Affairs' Contact Facilitation Database. This database contains any company that exports and registers itself in the database. Companies can also pay for advertising space in the directory, and the publishers of the directory also actively recruit companies to advertise in the pages. There is no methodology in place for ensuring that companies listed in the directory in fact abide by their claims regarding their products and services. The US Department of Commerce states that it "is unable to verify the qualifications and continued interest of any of the companies requesting to be included in this directory and accepts no responsibility for the accuracy of the information contained therein." In addition, the department does not endorse any of the products and services listed or advertised in the directory.

References

US Department of Commerce. *The Green Pages*. US West Dex, Inc. 1997.

US EPA NATIONAL VOLATILE ORGANIC COMPOUND EMISSION STANDARDS FOR ARCHITECTURAL COATINGS

Introduction

The National Volatile Organic Compound Emission Standards (NVOCES) for Architectural Coatings regulates the content of volatile organic compounds (VOCs) in architectural coatings sold or distributed in the United States. Architectural coatings are defined as coatings that are recommended for field application to stationary structures and their appurtenances, to portable buildings, to pavements, or to curbs. VOC emissions have the potential to cause or contribute to ground-level ozone, elevating it to levels that violate the national ambient air quality standards (NAAQS). Ground-level ozone is a major component of "smog" and is associated with a wide variety of human health effects, agricultural crop loss, and damage to forests and ecosystems. The EPA determined that architectural coatings account for about nine percent of VOC emissions from all consumer and commercial products. In many states, architectural coatings represent one of the largest identifiable sources of unregulated VOC emissions. The NVOCES standards regulate VOC content in architectural coatings in order to reduce overall VOC emissions and comply with NAAQS.

The standards arose from and are part of the Clean Air Act, section 183 (e). In September 1998, the EPA issued a final ruling on VOC standards for architectural coatings (CFR, September 11, 1998, Volume 63, Number 176), outlined below. Among other requirements, the ruling mandates labeling specifications for architectural coatings produced after September 13, 1999.

Program Summary

For the purposes of this regulatory program, architectural coatings are divided into over 50 sub-categories. Each sub-category has its own VOC content limit. The VOC content of an architectural coating must be within this EPA set limit. Domestic manufacturers and importers of foreign products for distribution in the US whose products do not meet the set standard may comply with the ruling by paying an exceedance fee. A tonnage exemption allows manufacturers who sell or distribute quantities of architectural coatings that do not comply with VOC content limits to comply if they produce less than a specified amount per year.

The labeling program is a combination of neutral labeling and negative labeling. It is neutral because it mandates the reporting of product ingredients. It can also be considered negative labeling because warning statements regarding ingredient impacts on home, health, and environment are required for some coating categories.

The labeling component of the regulation specifies that all architectural coatings produced after September 13, 1999, must indicate of the following information on the product label or lid of the container:

A) The date of manufacture or a code indicating this date (this can also be displayed on the bottom of the container);

B) A statement of the manufacturer's recommendation regarding thinning of the coating (this does not apply to thinning with water);

C) Either the VOC content of the coating, displayed in units of grams of VOC per liter of coating; or the VOC content limit (as specified by the standards) with which the coating is required to comply and does comply, displayed in units of grams of VOC per liter of coating. (Any coating that does not comply with VOC content limits, such ones for which the exceedance fee or tonnage exemption provision is being used, must be labeled with its VOC content.)

Architectural coatings used for industrial maintenance must also be labeled with one of the following phrases indicating that the coating is not intended for general consumer use:

A) "For industrial use only."

B) "For professional use only."

C) "Not for residential use," or, "Not intended for residential use."

D) "This coating is intended for use under the following conditions:" (Each of the following conditions that applies to the coating must be included).

1) Immersion in water, wastewater, or chemical solutions (aqueous and nonaqueous solutions), or chronic exposure of interior surfaces to moisture condensation;

2) Acute or chronic exposure to corrosive, caustic, or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions;

3) Repeated exposure to temperatures above 120 deg. C (250 deg.F);

4) Repeated (frequent) heavy abrasion, including mechanical wear and repeated (frequent) scrubbing with industrial solvents, cleaners or scouring agents; or

5) Exterior exposure of metal structures and structural components.

For recycled coating, manufacturers and importers must include the following statement indicating the post-consumer coating content on the label or lid of the container: "CONTAINS NOT LESS THAN *X* PERCENT BY VOLUME POST-CONSUMER COATING," where "*X*" is replaced by the percent by volume of post-consumer architectural coating.

In addition to labeling, compliance is enforced through mandatory recordkeeping and reporting of VOC content information. All manufacturers and importers of architectural coatings must report the VOC content of their products. Manufacturers who produce recycled architectural coatings, or who use the exceedance fee or the tonnage exemption provision to comply with the regulations, must keep records on the VOC content of their products.

Program Methodology

Mandatory labeling changes are used to target a problem (ground-level ozone), by focusing on one of the major pollutants (VOCs) that contributes to the problem. The VOC content limits were determined using information gathered during an initial EPA process of regulated negotiation (which began in 1992 and concluded without consensus), along with other information. Specifically, the EPA took into consideration data from a 1990 industry study on the volume, VOC content, and hazardous air pollutant (HAP) content of architectural coatings.

The EPA expects that the VOC content of architectural coatings limits will encourage the reformulation of products with lower VOC content. Additionally, labeling requirements that mandate indicating VOC content on the product label will provide consumers with a method of readily identifying products with lower VOC content.

References

US Federal Register: September 11, 1998 (Volume 63, Number 176).

Product Categories

Architectural Coatings